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MICHIGAN HEALTH STATISTICS

1978

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

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Introduction

The 1978 edition of Michigan Health Statistics is a statistical summary of vital events for calendar year 1978. Data relative to population, births, deaths, fetal deaths, marriages, divorces and communicable diseases are included. Although most of the data in this report pertain to events occurring in 1978, some data for prior years have been included to illustrate trends. Most of the tabulations refer to Michigan residents. Some events, however, such as marriages and divorces are tabulated with respect to where the event occurred rather than the residence of the party or parties involved.

This edition incorporates two major additions to the mortality section. For the first time age-adjusted rates by race and sex are included. Also new is a set of tables showing the distribution of deaths by specific detailed cause within each of the leading cause of death groups by year for the period 1968-1978.

As a certain number of Michigan residents either deliver babies or die out of state each year, it is necessary to include data obtained from the certificates of other states in any residence tabulations pertaining to Michigan residents. This report includes all such out-of-state certificates received prior to March 15, 1979, and all in-state certificates and records received prior to March 15, 1979. Although a few records for calendar year 1978 were received after these filing dates, their exclusion from this report is statistically insignificant.

The 1970 edition of Michigan Health Statistics contained a complete section devoted to population characteristics. Similar data are not available for 1978 and thus the 1978 edition of Michigan Health Statistics does not have a section on population. The reader is referred to the 1970 edition for detailed population characteristics and to the reference appendix of this edition for county and state population estimates. More detailed population data are available in the Bureau of Management and Budget publication "Population Projections" and in the U.S. Census Bureau P-26 series.

The report is composed of the following sections and appendices:

1. Natality Section, 2. Mortality Section, 3. Marriage and Divorce Section, 4. Reference Appendix.

Any comments or suggestions concerning the content and format of this report are always welcome. Any additional needs for data or analyses may be directed to the Office of Vital and Health Statistics. A summary of prepared vital statistics tabulations, Index to Michigan Vital Statistics 1960 to Present, is also available. This index lists the type of tabulations and data available. The Office will make every attempt to comply with requests for data within the limitation of staff and resources.

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Technical Notes, Definitions, Rates and Ratios

Definitions

BIRTH WEIGHT—Weight of fetus or infant at time of delivery (normally recorded in pounds and ounces).

FETAL DEATH—Death prior to the complete expulsion or extraction from its mother of a product of conception, having passed through at least the 20th week of gestation; the fetus shows no signs of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. (Note: This includes both spontaneous and induced terminations.)

FIRST BIRTH—A live birth where the maternal medical history indicates there were no prior live births to the mother.

GESTATIONAL PERIOD—Number of weeks elapsed between the first day of the last menstral period and date of delivery.

HEBDOMADAL DEATH—Death occurring to an individual less than 7 days of age.

INFANT DEATH—Death occurring to an individual of less than 1 year of age.

INTERPREGNANCY TIME PERIOD—Birth date minus date of last termination, whether a live birth or fetal death, in months. Time periods of zero length are dropped to exclude 2nd or higher births of multiple deliveries.

LEADING CAUSES OF DEATH—Deaths are grouped into 111 categories dependent upon the underlying cause of death. Ranks are assigned by organizing these categories according to the number of deaths in each category from most frequent to least.

LIFE EXPECTANCY—A hypothetical calculation of the average age at death for a cohort of persons subject to the age-specific mortality rates observed over a given time period.

LIFE TABLE VALUES:

${}_nq_x$ = The proportion of persons in the cohort alive at the beginning of an age interval (x) who will die before reaching the end of that age interval (x+n)

l_x = The number of persons living at the beginning of an age interval (x) out of an original cohort of 100,000

${}_nd_x$ = The number of persons who would die during an age interval (x to x+n) out of an original cohort of 100,000

${}_nL_x$ = The number of person-years that would be lived within an indicated age interval (x to x+n) out of an original cohort of 100,000 alive for all or part of the interval

T_x = The number of person-years that would be lived after the beginning of an age interval (x) by an original cohort of 100,000 until all are assumed to have died

$\mathring{e}_x$ = The average remaining lifetime (in years) for an individual person who survives to the beginning of an indicated age interval (x)

LIVE BIRTH—A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

LIVE-BIRTH ORDER—Order number is equal to number of previous live births plus current birth.

LOW-WEIGHT BIRTH—Birth wherein the birth weight is equivalent to 2,500 grams or less (approximately 5 lbs., 8 oz.).

MATERNAL DEATHS—Those deaths wherein the physician has designated a maternal condition as the underlying cause of death.

MEAN—The average of a set of values, equal to the sum of the values divided by the number of values.

MEDIAN—The central value of a distribution of values wherein the same percentage of observations are above this point as are below.

MINOR CIVIL DIVISION—City, Village or Township.

NEONATAL DEATH—Death occurring to individual less than 28 days of age.

OCCURRENCE—Place where the event actually occurred.

PERINATAL DEATH—Fetal death or death under 1 week of age.

PERINATE—Fetus or newborn during the perinatal period (from the end of the 20th week of gestation to the 7th day after birth).

PROBABILITY OF EVENTUALLY DYING FROM A GIVEN CAUSE OF DEATH—The chance of death due to a given cause rather than some competitive cause over the course of a lifetime based on current mortality data and life expectancy techniques.

RACE—Race for mother, father, or decedent is as stated on certificate. Race of child is determined from the race of the parents.

REMAINING YEARS OF LIFE—A hypothetical calculation of the average number of years a cohort of persons will live given that they have reached a specific age and assuming they are subject to the age-specific mortality rates observed over a given time period.

RESIDENCE—Usual place of residence for person to whom event occurred. For births and fetal deaths residence is defined as the mother's usual place of residence.

TOTAL BIRTHS—Live Births and Fetal Deaths.

UNDERLYING CAUSE OF DEATH—That condition giving rise to the chain of events leading to death.

Rates and Ratios

AGE-ADJUSTED DEATH RATE = A summary rate of death that is developed using a standard population distribution to improve the comparability of rates for areas or population subgroups with differing age distributions. When calculated by the direct method, as in this report, age-specific death rates for a geographic area or population subgroup are multiplied by the standard population by specific age with the products summed and divided by the total standard population. Age-adjusted death rates represent the mortality experience that would have occurred in a standard population had the age-specific rates of the area or population subgroup been experienced by the standard population. These rates are presented as per 100,000 population.

AGE-SPECIFIC BIRTH RATE = No. of Resident Live Births for a Specific Age of Mother divided by Total Female Population of Specific Age × 1,000

AGE-SPECIFIC DEATH RATE = No. of Deaths in Specific Age Group divided by Total Resident Population in Specific Age Group × 100,000

AGE-SPECIFIC DEATH RATE BY CAUSE OF DEATH = No. of Deaths in Specific Age Group and From a Specific Cause divided by Total Resident Population in Specific Age Group × 100,000

AGE-SPECIFIC MARRIAGE RATE = No. of Marriages in Specific Age Group by Sex divided by Total Resident Population in Specific Age and Sex Group × 1,000

CAUSE-SPECIFIC RATE = No. of Deaths due to a Specific Cause divided by Total Resident Population × 100,000

COMMUNICABLE DISEASE CASE RATE = No. of Reported Cases (Specific Communicable Diseases) divided by Total Resident Population × 100,000

CRUDE BIRTH RATE = No. of Resident Live Births divided by Total Resident Population × 1,000

CRUDE DEATH RATE = No. of Resident Deaths divided by Total Resident Population × 1,000

DIVORCE RATE = No. of Persons (Divorces and Annulments) divided by Total Resident Population × 1,000

FERTILITY RATE = No. of Resident Live Births divided by Total Female Population (Ages 15-44) × 1,000

FETAL DEATH RATE = No. of Resident Fetal Deaths divided by Total Resident Live Births and Resident Fetal Deaths × 1,000

FETAL DEATH RATIO = No. of Resident Fetal Deaths divided by Total Resident Live Births × 1,000

FIRST MARRIAGE RATE = No. of Marriages to Persons not Previously Married by Sex divided by Total Resident Population by Sex × 1,000

INFANT MORTALITY RATE = No. of Infant Deaths divided by Total Resident Live Births × 1,000

LOW-WEIGHT BIRTH RATIO = No. of Low-Weight Births divided by Total Resident Live Births × 1,000

MARRIAGE RATE = No. of Persons Married divided by Total Resident Population × 1,000

MATERNAL DEATH RATE = No. of Maternal Deaths divided by Total Resident Live Births × 10,000

NEONATAL DEATH RATE = No. of Neonatal Deaths divided by Total Resident Live Births × 1,000

NO PRENATAL CARE RATIO = No. of Live Births to Mothers With No Prenatal Care divided by Total Resident Live Births × 1,000

PERINATAL DEATH RATE = No. of Perinatal Deaths divided by Total Resident Live Births and Resident Fetal Deaths × 1,000

RATE OF NATURAL INCREASE = Total Resident Live Births divided by Total Resident Deaths

TOTAL FERTILITY RATE = Sum of (Age-Specific Birth Rates) × (Number of Years in Age Group) for each Age Group from ages 10-14 through 45-49 years

RELIABILITY OF RATES—Care should be taken in drawing specific inferences from comparisons of rates for different areas or different periods of time. Rates based on a small number of events or for a small area tend to exhibit considerable variation from time period to time period or place to place. Excessive variation in rates not only negates their utility as estimators of the probability of an event occurring but also their usefulness for comparative purposes. Also, one should recognize the limitations of using unadjusted rates in attempting to attribute rate differences to particular factors. For example, one should not attempt to state that there was a significant difference in rates for two geographic areas for arteriosclerosis without first adjusting the rates to negate the effects of differing age distributions in the two areas. Many times there are simply not sufficient data available to adequately adjust rates for all possible compounding factors. For this reason, the reader should exercise diligence and caution while attempting to draw substantive conclusions when comparing vital statistics rates.

Qualifications and Limitations of Data and Calculations

UNDERREGISTRATION OF EVENTS

The underregistration of vital events in Michigan is considered to be a minimal problem particularly for births and deaths. Tests of registration completeness conducted in conjunction with the 1950 Census indicate that the registration of births was 98.5 percent complete, and that death registration was even more complete. The number of certificates received too late for inclusion in annual statistical files is insignificant when examining statewide patterns.

GEOGRAPHIC ALLOCATION

The allocation of events on a residence or occurrence basis is for the most part accurate and complete. However, allocations to minor civil divisions are subject to question in some instances. In those cases where the respondent completes the residence item with a mailing address, geographic allocation is sometimes undeterminable and the record receives an unknown minor civil division code.

FETAL DEATHS

Fetal deaths in Michigan include only those conceptions that have passed through 20 weeks gestation. Inadequacies in determining the gestational age of the fetus may account for some underreporting of fetal deaths.

COMPARABILITY IN CAUSE OF DEATH STATISTICS

The reader should bear in mind two major limitations in interpreting changes in cause-of-death statistics. Changes in nomenclature and the classification scheme (International Classification of Diseases) and changes in diagnostic practices may seriously affect the comparability of such statistics over time. The classification scheme (ICD) is modified approximately once every ten years to reflect changing medical opinion and practice. The reader is most accurate when comparing cause-of-death certificates which are coded via one revision of the International Classification of Diseases and utilizing the coding practices and procedures in effect at that time.

In order to compare cause-of-death statistics from one revision to the next it is necessary to apply a 'comparability ratio'. Such ratios are developed by comparing the number of deaths assigned to a certain condition or group of conditions under one revision to the number assigned under another revision of the ICD.

LIFE EXPECTANCY

The procedure used to obtain the Michigan life table values is called the iterative method. This is a method which has been developed by Professor Felix Moore of the Department of Biostatistics, School of Public Health, University of Michigan.

For the age group 0-1 the method utilizes the algorithm developed by Greville with no iteration. For all subsequent age groups the method of Greville (Keyfitz) is used with three iterations to improve the estimate of ${}_nd_x$ and ${}_nq_x$. An iteration procedure is also used for ${}_nL_x$ for age groups 75-80 and 80-85 where the accuracy of mortality information is a factor and for obtaining the separation factor for the age group 1-4.

Age-Adjustment Procedure and Population Estimation

The age-adjusted rates for Michigan presented in this report for years 1970-1978 were calculated using Michigan resident mortality data and a revised series of population estimates. Death records with the race not stated were first randomly allocated to the white and other than white groups based on the proportion of Michigan resident deaths in each of the racial categories for that year. Records with sex not stated were randomly assigned to male and female (50 percent each). Records with age not stated were used in the calculation of the crude rates but were omitted in the calculation of age-specific rates.

The population of Michigan as of April 1, 1970 as enumerated by the U.S. Census Bureau was used for the 1970 population figure in this report. Michigan population estimates for each year from 1971-1978 were developed from projections by age and sex furnished by the Michigan Department of Management and Budget, Office of the Budget, and total population estimates published by the U.S. Census Bureau. The age and sex subgroup projections were the same as those previously used in conjunction with state total provisional estimates to produce the population estimates published in previous editions of this report. The total state estimates used in this population revision were the estimates as of July 1 for each year published in the Current Population Reports Series P-26, Nos. 32, 69, 110, 75-22, 76-22, 78-22, and Series P-25, No. 761. The 1978 figure is provisional. Race estimates were prepared by the Michigan Department of Public Health, Office of Vital and Health Statistics, by projecting into the 1970's the mean annual rate of change in the race proportions of each age-sex group of the population observed between the 1960 and 1970 censuses.

In the age-adjustment procedure nineteen age groups were employed including under 1 year, 1-4 years, five year age groups from 5-9 years to age 80-84, and 85 years and over. Age-specific rates for the total population and for each subgroup were applied to the same standard population distributed by age. The resulting "expected deaths" were then summed over the nineteen age groups and divided by the total of the standard population to obtain the age-adjusted rate. The standard population selected was the 1940 United States enumerated population. Comparisons can be made between subgroup rates, between rates in different years, and between rates for Michigan and similarly computed rates for the United States. Rates for the United States were taken from publications by the National Center for Health Statistics, U.S. Dept. of H.E.W.

NATALITY

SECTION I

Natality: An Overview 1978

TOTAL RESIDENT BIRTHS	140,023
TOTAL RESIDENT LIVE BIRTHS	138,802
RESIDENT LIVE BIRTHS PER DAY	380.3
TOTAL RESIDENT FETAL DEATHS	1,221
RESIDENT FETAL DEATHS PER DAY	3.3
CRUDE BIRTH RATE	15.1
FERTILITY RATE	69.9
FETAL DEATH RATIO	8.8
FIRST ORDER BIRTHS (PERCENT OF TOTAL LIVE BIRTHS)	41.6
MEDIAN BIRTH WEIGHT IN GRAMS (LIVE BIRTHS)	3,374
MEDIAN BIRTH WEIGHT IN GRAMS (FETAL DEATHS)	1,544
LOW-WEIGHT LIVE BIRTHS	10,013
LOW-WEIGHT BIRTH RATIO	72.1
MEDIAN AGE OF MOTHER (LIVE BIRTHS)	24
MEDIAN AGE OF MOTHER (FETAL DEATHS)	24
LIVE BIRTHS WITH CONGENITAL ANOMALIES	1,263
CONGENITAL ANOMALIES RATE	909.9
NO PRENATAL CARE RATIO	6.4
HOME BIRTHS	573
LIVE BORN SETS OF TWINS	1,312
LIVE BORN SETS OF TRIPLETS	18
LIVE BORN MULTIPLE BIRTHS OF FOUR OR MORE	1
MALE LIVE BIRTHS PER 100 FEMALE LIVE BIRTHS	104.7

Between 1900 and 1978 the number of total births has varied considerably. The general trend has been increasing numbers of total births from 1900 through 1957 and declining numbers since that time. According to the annual enumeration of births by local officials there were in 1900 45,024 total births in Michigan. This figure dropped slightly to 44,722 in 1901 (the lowest total in the century). The number of total births reported increased significantly with the initiation in 1906 of mandatory filing of individual certificates for each Michigan birth. Total births increased during the next two decades, dropped temporarily in 1919, and then leveled off at just over 100,000 between 1924 and 1930. During the first years of the Great Depression, total births declined from 102,596 in 1930 to 83,258 in 1933. Then from 1933 to 1957, excluding the war years of 1944 and 1945, total births increased to a century high peak of 211,642 in 1957. Total births in the next two decades dropped to a post-World War II low of 132,649 in 1976. In the past two years, the number of total births increased. The number in 1978 was 140,023. (Table 1.1).

LIVE BIRTHS

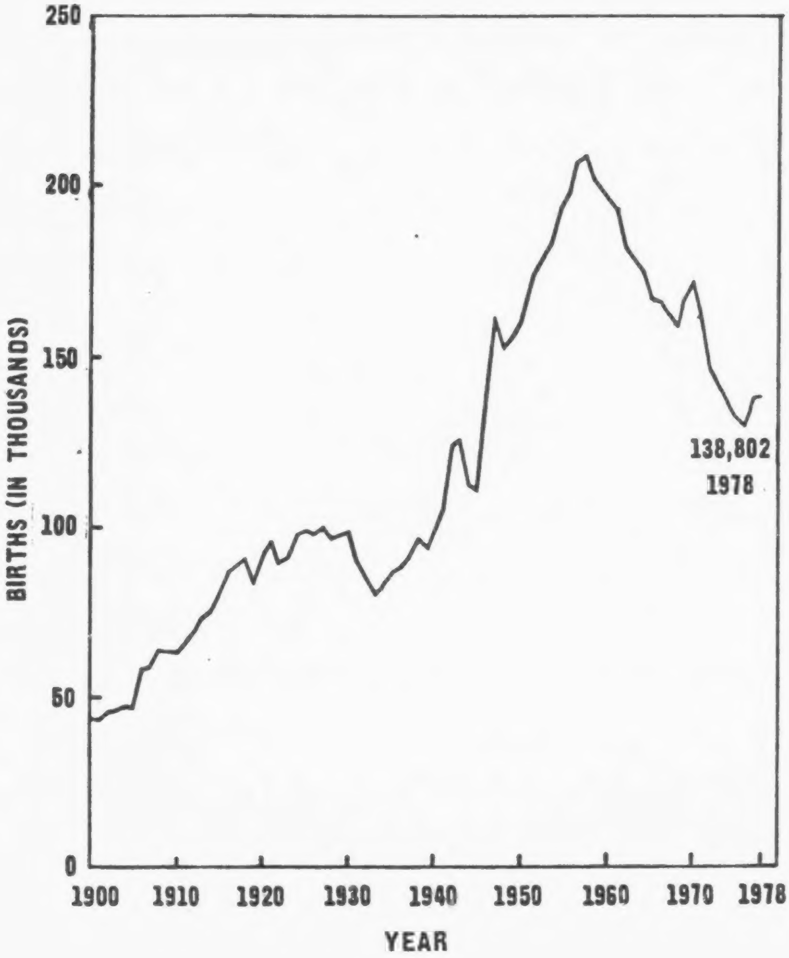
Between 1900 and 1978, the number of live births has varied considerably. The smallest number of live births officially recorded in this century was 43,221 in 1901. The actual number of live births was undoubtedly higher as a significant percentage of births were not recorded prior to 1906. The greatest number was 208,488 in 1957. Figure 1.1 portrays the number of live births for Michigan from 1900 through 1978. Live births, which constitute a large percentage of total births, naturally followed the same pattern of increases and decreases, rising appreciably from 43,699 in 1900 to 208,488 in 1957, the peak year for this century. Between 1957 and 1976, live births decreased by 37 percent to 131,378, the lowest total in 31 years. In 1977, however, live births increased by 5.4 percent, the largest such increase since 1951. The 1978 live birth figure of 138,802 was slightly higher (0.3 percent) than that of 1977.

The national pattern is similar to that observed in Michigan. Live births increased from an estimated 2,718,000 in 1909 to an estimated 4,300,000 in 1957. Since 1957, there has been a general decline in live births. The low point occurred in 1973 when

TABLE 1.1 - Total Births, Michigan Residents
Selected Years, 1900-1978

YEAR	TOTAL BIRTHS
1900	45,024
1901	44,722
1910	66,668
1920	96,015
1930	102,595
1933	83,258
1940	101,708
1950	163,150
1957	211,642
1960	198,064
1970	173,727
1971	164,167
1972	148,624
1973	143,232
1974	138,865
1975	135,304
1976	132,649
1977	139,704
1978	140,023

FIGURE 1.1 Live Births, Michigan Residents, 1900-1978.



live births in the United States totaled 3,136,965. The 1977 national live birth total was 5.0 percent higher than the 1976 figure, while the number for 1978 (3,333,279) represents an additional gain of just 0.2 percent.

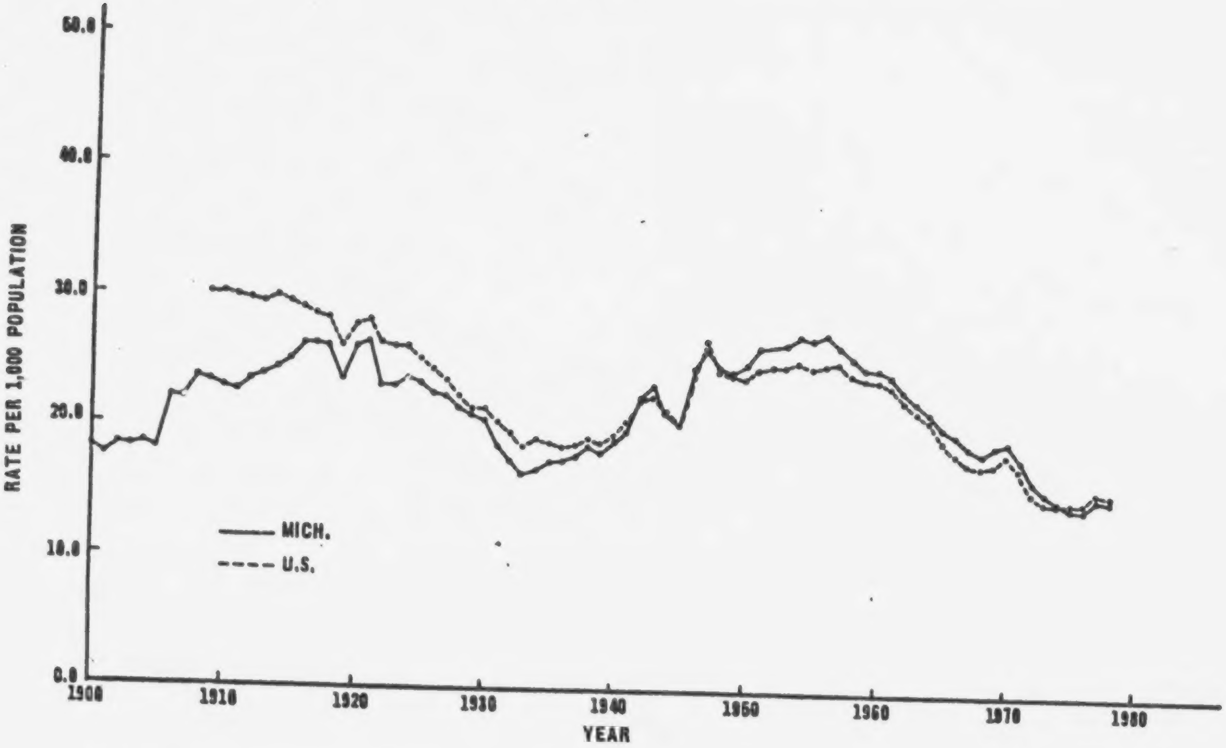
Another view of the historic pattern in live births may be obtained through examination of changes in the crude birth rate. By considering population size the historic pattern of live births is stabilized (Figure 1.2). The crude birth rate in Michigan ranges from a low of 14.4 in 1976 to a high of 27.4 in 1956. The crude birth rate increased from 22.1 in 1906, the first year for filing birth certificates, to 26.2 in 1916. During the period 1917 to 1933 Michigan's crude birth rate declined steadily, reaching 16.2. The birth rate rose over the next 23 years to a peak in 1956 (27.4). Since 1956, Michigan's crude birth rate has declined. In 1973, a century low rate was observed, replacing the 1933 rate as the lowest recorded for the state. The next three years, in succession, replaced the prior year figure as the lowest birth rate on record. In 1977, the crude birth rate increased to 15.2. This was only the third time the crude birth rate increased in 21 years. The 5.6 percent increase in the crude birth rate in 1977 was the largest percentage increase in this rate since 1947. The crude birth rate declined slightly in 1978 to 15.1.

National statistics follow the same general pattern of rising and falling as observed in Michigan. The highest rate observed nationally over the period 1909 through 1978 was 30.1 in 1910, while the lowest was 14.8, occurring both in 1975 and 1976. United States live birth rates were above those observed in Michigan without exception from 1909 to 1941. Between 1942 and 1947, national rates were above those for the state two times. National birth rates fell below Michigan rates from 1948 through 1974. For the past four years the United States rate was just above that observed in Michigan.

FERTILITY

The crude birth rates examined above are useful statistics for gauging overall trends in live births for specific geographic areas. Where attempts are made to interpret such trends, however, crude birth rates can be misleading. These rates do not incorporate

FIGURE 1.2 - Live Birth Rates, Michigan Residents, 1900-1978 and United States Residents[1] 1909-1978



[1] U.S. Rates Prior to 1909 are not Available; U.S. 1978 Figure is provisional

TABLE 1.2 - Live Births and Crude Birth Rates, Michigan and United States Residents, Selected Years, 1900-1978

UNITED STATES			MICHIGAN	
LIVE BIRTHS	RATE	YEAR	LIVE BIRTHS	RATE
N/A	N/A	1900	43,699	18.1
2,777,000	30.1	1910	64,109	22.8
2,950,000	27.7	1920	92,245	25.1
2,618,000	21.3	1930	98,882	20.4
2,559,000	19.4	1940	99,106	18.9
3,632,000	24.1	1950	160,055	25.1
4,257,850	23.7	1960	195,056	24.9
4,268,326	23.3	1961	192,825	24.4
4,167,362	22.4	1962	182,790	23.0
4,098,020	21.7	1963	178,871	22.3
4,027,490	21.0	1964	175,103	21.6
3,760,358	19.4	1965	166,464	20.3
3,606,274	18.4	1966	165,794	19.9
3,520,959	17.8	1967	162,756	18.9
3,501,564	17.5	1968	159,058	18.3
3,600,206	17.8	1969	165,760	19.0
3,731,386	18.4	1970	171,667	19.3
3,555,970	17.2	1971	162,244	18.0
3,258,411	15.6	1972	146,854	16.3
3,136,965	14.9	1973	141,550	15.6
3,159,958	14.9	1974	137,414	15.1
3,144,198	14.8	1975	133,931	14.6
3,167,788	14.8	1976	131,378	14.4
3,326,632	15.4	1977	138,416	15.2
3,333,279	15.3	1978	138,802	15.1

specifically the size of the population capable of bearing children. This population subset, generally considered to be women between the ages 15 through 44, does not always maintain a stable relationship with the total population. A measure for analyzing changing birth patterns that is more exact is the fertility rate. Since the fertility rate relates the number of live births to the female population of childbearing age, valid comparisons for various periods of time and various locations are possible.

A comparison of fertility rates for Michigan with those for the United States is presented in Table 1.3. Some interesting contrasts can be seen between fertility rates and the crude birth rates as presented in Table 1.2. In both the state and the country the crude birth rates dropped between the years 1950 and 1960 while the fertility rates increased between these two years. While Michigan's crude birth rate was below the United States rate between 1975 and 1978, the state's fertility rate was higher than the national rate.

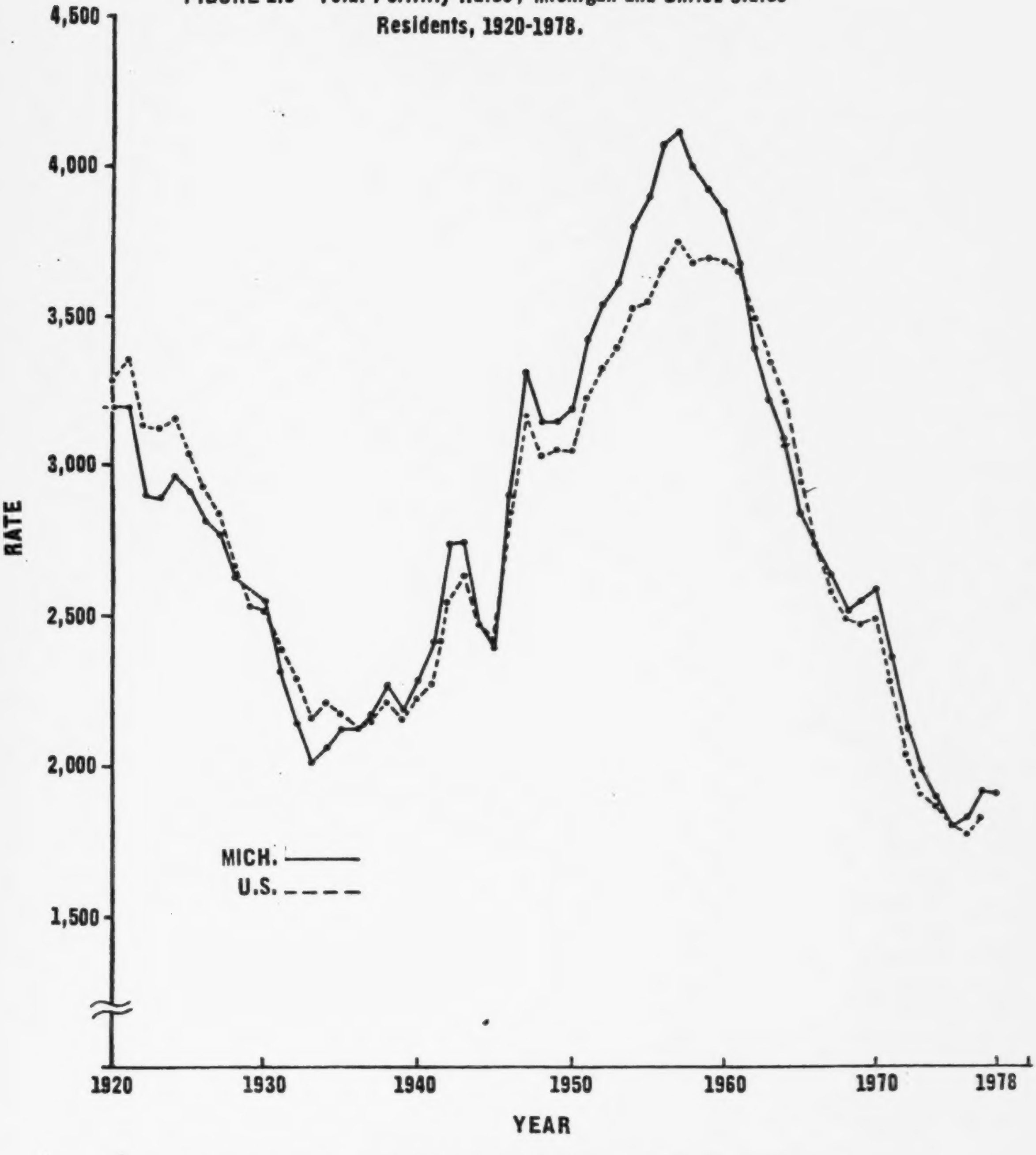
These differences point to the importance of the fertility rate in making comparisons and drawing conclusions, The crude birth rate changes observed understate the recent decline in fecundity for both regions. Since 1960 the crude birth rate in Michigan has dropped 39.4 percent, while the fertility rate in 1978 was 43.2 percent below the 1960 rate. For the United States over this same period the crude birth rate declined 35.4 percent and the fertility rate fell by 43.6 percent. The proportion of the population in the childbearing ages has increased over this 18 year period.

Figure 1.3 displays the changes in the total fertility rate between 1920 and 1978 for Michigan and the United States. The total fertility rate is a hypothetical measure of the number of live births that would occur to each 1,000 women during their reproductive life, if these women experienced the age-specific birth rates observed in a given year. Michigan's total fertility rate has generally paralleled that of the nation. The Michigan rate dropped from 3,195.5 in 1920 to 2,006.5 in 1933 and then increased between 1933 and 1957, reaching 4,100.0 in the latter year. Since 1957, the total fertility rate in Michigan has declined to a low of 1,798.5 in 1975. The rate was 1,896.5 in 1978 for Michigan and 1,800.2 for the nation.

TABLE 1.3 - Fertility Rates, Michigan and United States Residents, Selected Years, 1900-1978

FERTILITY RATE UNITED STATES	YEAR	FERTILITY RATE MICHIGAN
---	1900	78.5
126.8	1910	99.0
117.9	1920	111.6
89.2	1930	87.6
79.9	1940	78.9
106.2	1950	110.5
118.0	1960	123.1
117.2	1961	119.0
112.2	1962	110.8
108.5	1963	106.6
105.0	1964	102.6
96.6	1965	95.9
91.3	1966	94.0
87.6	1967	90.8
85.7	1968	87.3
86.5	1969	89.6
87.9	1970	91.7
81.8	1971	84.7
73.4	1972	76.5
69.2	1973	72.1
68.4	1974	70.0
66.7	1975	67.1
65.8	1976	68.7
67.8	1977	71.1
66.6	1978	69.9

FIGURE 1.3 Total Fertility Rates;[1] Michigan and United States Residents, 1920-1978.



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[1] Total Fertility Rate is total children to 1,000 Women in their lifetime Assuming Constant Live Birth Rates.

Since 1972 both Michigan and national total fertility rates have been below 2,000. A total fertility rate of over 2,000 is necessary for replacement of the parents since not all women survive the reproductive years nor do all children survive to adulthood. If the total fertility rate falls below 2,000 for a long period, a natural decrease in population will eventually result.

RACIAL COMPOSITION

During the period from 1970 through 1978, the racial composition of live births in Michigan also changed. Live births of white persons declined from 83.8 percent of all live births in 1970 to 82.3 percent in 1978. Live births of black persons increased from 15.7 percent of the total in 1970 to 16.6 percent in 1978. Live births of all other races increased from 0.4 percent in 1970 to 0.7 percent in 1977 and 1.0 percent in 1978. It should be noted that Indians from India were classified as white before 1978 and among other races in 1978. In absolute terms, the numbers of births of black and white persons have declined, with an especially sharp decline observed in births of white persons between 1970 and 1972. The number of live births of American Indians, Chinese, Filipino and all other races increased between 1970 and 1978 (Table 1.4).

Table 1.5 provides the racial composition of Michigan's live birth rate and fertility rate. In 1970 the crude birth rate for other than white persons was 44.6 percent above that for whites. By 1973, this percentage had increased to 62.1 percent. In 1974, the percent dropped sharply to 48.2, and by 1978 it had fallen to 36.1. Declines in crude birth rates for both groups are evident over these eight years. The crude birth rate for white persons in 1978 was 21.7 percent below that observed in 1970 while the rate displayed by the other than white group declined 26.3 percent over the same period. In 1978, the crude birth rate was unchanged from the 1977 rate for white persons but declined by 1.5 percent for all other races.

The fertility rates contained in Table 1.5 reveal that there are important differences in population structure for white persons compared to those of other races. By comparing live births to the respective numbers of women aged 15-44 for these two groups, the relative

TABLE 1.4 Live Births by Infant's Race[1] or National Origin Michigan Residents, 1970-1978

Year	Total All Races	White	Black	American Indian	Chinese	Filipino	Other[2]
1970	171,667	143,871	26,957	299	151	91	188
1971	162,244	134,165	27,245	313	135	101	177
1972	146,854	119,787	26,215	316	124	109	197
1973	141,550	114,878	25,741	302	124	121	187
1974	137,414	112,474	23,328	270	116	144	244
1975	133,931	109,718	23,224	294	151	138	226
1976	131,378	107,907	22,349	368	169	166	243
1977	138,416	114,042	23,195	431	157	153	276
1978	138,802	114,217	23,025	377	185	148	672

1- Births of unknown race included in total only. Persons of Spanish or of Mexican American descent are included with whites.

2- Includes Japanese, Hawaiian, other Asian or Pacific Islanders. Indians from India were counted as "White" from 1970-1977, and with "Other" in 1978.

TABLE 1.5 - Crude Birth Rates and Fertility Rates by Race[1], Michigan Residents, 1970-1978[2]

WHITE RACE		YEAR	ALL OTHER RACES	
CRUDE BIRTH RATE	FERTILITY RATE		CRUDE BIRTH RATE	FERTILITY RATE
18.4	88.0	1970	26.6	117.1
16.9	80.5	1971	26.0	113.9
15.1	72.0	1972	24.5	107.1
14.5	68.3	1973	23.5	101.6
14.1	66.2	1974	20.9	89.5
13.8	65.8	1975	20.5	89.0
13.6	65.5	1976	19.5	85.4
14.4	68.4	1977	19.9	85.9
14.4	67.4	1978	19.6	83.6

[1] Births of unknown race are excluded.
[2] Data for years 1971-1977 have been revised as a result of new population estimates.

differences in rates decrease. The fertility rate for other than white persons was 33.1 percent above the rate for white persons in 1970 and 24.0 percent higher in 1978. Since 1970 the fertility rate for other than white persons has declined 28.6 percent compared with a 23.4 percent drop for white persons. In 1978 the fertility rate for persons other than white declined by 2.7 percent from the rate observed in 1977 while the rate for white persons dropped by 1.5 percent.

AGE OF MOTHER

In 1978 51.4 percent of all live births were to mothers less than 25 years of age. Only 0.6 percent occurred to women 40 or more years of age. The median age of mothers was 24 years. Mothers of other than white infants were younger (median 23 years) than mothers of white children (median 25 years). Approximately 61 percent of the other than white infants were born to mothers aged 24 or less compared to 49 percent of the white infants. This differential is the result of the relatively large percentage of other than white live births to mothers at ages 15-19 (Table 1.6).

AGE-SPECIFIC LIVE BIRTH RATES

As displayed in Table 1.7, a substantial reduction in the age-specific birth rates for Michigan females across all age groups has occurred over the last eleven years. The greatest decrease in birth rates between 1968 and 1978 was for women over 34 years of age. Birth rates for women under 25 and for women 30-34 also declined more than did the birth rate for women of all ages. The decline in the birth rate for women 25-29 years old was only 7.6 percent, the smallest decrease observed for any age interval.

In 1968, women aged 20-24 had the highest birth rate of any age group, 19.8 percent higher than women aged 25-29. The relatively slow decline of the birth rate of women in the 25-29 age group over the past decade has progressively reduced the differential between the birth rate of women in the 20-24 and 25-29 age groups. In 1977, the birth rate of women in the 25-29 age group surpassed that of women aged 20-24, for the first time in the sixty years these rates have been computed. The birth rate for women aged 25-29 increased relative to that for women aged 20-24 again in 1978 (Table 4.4).

TABLE 1.6 - Total Live Births and Percent Distribution by Age of Mother and Race of Child, Michigan Residents, 1978

AGE OF MOTHER	TOTAL		RACE OF CHILD					
			WHITE		ALL OTHER		NOT STATED	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Under 15 Years..........	345	0.2	125	0.1	219	0.9	1	0.6
15-19 Years.............	21,487	15.5	15,203	13.3	6265	25.7	19	10.7
20-24 Years.............	49,498	35.7	40,993	35.9	8444	34.6	61	34.3
25-29 Years.............	43,744	31.5	37,924	33.2	5763	23.6	57	32.0
30-39 Years.............	22,929	16.5	19,342	16.9	3549	14.5	38	21.3
40 Years and Over.......	779	0.6	613	0.5	165	0.7	1	0.6
Not Stated..............	20	0.0	17	0.0	2	0.0	1	0.6
Total...................	138,802	100.0	114,217	99.9	24407	100.0	178	100.1
Median Age at Last Birthday	24	000	25	000	23	000	25	000

TABLE 1.7 - Age-Specific Live Birth Rates, Michigan Residents, 1968 and 1978

AGE GROUP	LIVE BIRTHS		BIRTH RATE		% Change in Birth Rate
	1968	1978	1968	1978	
Under 20[1] Years	26,790	21,832	65.3	46.3	(29.1)
20-24 Years	60,072	49,498	171.5	125.3	(26.9)
25-29 Years	41,561	43,744	143.2	132.3	(7.6)
30-34 Years	18,613	18,367	73.5	53.8	(26.8)
35-39 Years	9,095	4,562	36.3	17.5	(51.8)
40 and Over[2]	2,902	779	10.9	4.2	(61.5)
Not Stated	25	20	000	000	000
Total[3]	159,058	138,802	87.3	69.9	(19.9)

[1]-Age-Specific Birth Rates for Under 20 Based on Female Population 15-19.

[2]-Age-Specific Birth Rates for 40 and Over Based on Female Population 40-44.

[3]-Total Birth Rate (Fertility Rate) Based on Female Population 15-44.

[4]-Parenthesis ( ) indicate a decline.

Table 1.8 displays age-specific live birth rates for white women and women of all other races for the years 1970 and 1978. Generally, rates for other than white women were above those for white women. The exception to this is the age group 25-29. In both 1970 and 1978 the live birth rate for other than white women in this age group was slightly below that for white women. Live birth rates declined over these eight years across all ages for both racial categories. The largest relative decreases in these rates were experienced by women of both racial groups who were 35 years or older and by other than white women under 20 years of age. The smallest declines were for women aged 25-29, with the rate for white women in this age group dropping by 15 percent and that for other than white women falling by 8.3 percent.

BIRTH ORDER

The relative distribution of Michigan resident live births by live birth order is displayed in Table 1.9. There has been a considerable shift of this distribution in recent years. First births comprised 32.8 percent of all live births in 1968 and 41.6 percent in 1978. The proportion of second order live births also increased. On the other hand, 40.7 percent of all live births in 1968 were third and higher order live births. In 1978 the figure was 25.1 percent. The greatest relative decline occurred in fifth or higher order live births. These constituted 15.2 percent of all live births in 1968 compared to 3.9 percent in 1978.

The percent of live births which are first order births has increased nationally as well as in Michigan. Between 1960 and 1978, the percent of first order births increased from 22.9 to 41.6 in Michigan and by a similar amount nationally (Figure 1.4). The total number of first births, however, has declined since 1970 in both Michigan and the United States (Table 1.10).

The distribution of births by birth order and mother's age for 1970 and 1978 is displayed in Tables 1.11 and 1.12. The median age of mothers having their first child increased from 21 to 22 between 1970 and 1978. For mothers having their second child, the median age increased from 23 to 25. The median ages for mothers having their third and fourth child each increased by one year between 1970 and 1978.

TABLE 1.8 - Age Specific Live Birth Rates by Race[1], Michigan Residents, 1970 and 1978

	RACE[1]					
	WHITE			ALL OTHER[1]		
AGE GROUP	1970	1978	% Change in Rate	1970	1978	% Change in Rate
Under 20[2] Years.	56.9	38.7	(32.0)	154.1	86.4	(43.9)
20-24 Years.....	172.9	123.1	(28.8)	197.3	136.0	(31.1)
25-29 Years.....	156.0	132.6	(15.0)	140.5	128.8	(8.3)
30-34 Years.....	75.6	52.9	(30.0)	80.1	58.9	(26.5)
35-39 Years.....	31.2	16.8	(46.2)	40.9	21.6	(47.2)
40 and Over[3]	8.1	3.8	(53.1)	12.9	6.4	(50.4)
Total[4]	88.0	67.4	(23.4)	117.1	83.6	(28.6)

[1] Data on race not stated excluded.

[2] Age-Specific Birth Rates for Under 20 Based on Female Population 15-19

[3] Age-Specific Birth Rates for 40 and Over Based on Female Population 40-44

[4] Total Birth Rate (Fertility Rate) Based on Female Population 15-44

TABLE 1.9 - Live Births by Live Birth Order
Michigan Residents, 1968 and 1978

LIVE BIRTH ORDER	NO. OF BIRTHS		PERCENT	
	1968	1978	1968	1978
First Birth..........	52,147	57,767	32.8	41.6
Second Birth..........	40,638	44,356	25.5	32.0
Third Birth...........	25,045	21,486	15.7	15.5
Fourth Birth..........	15,593	7,984	9.8	5.8
Fifth Birth or Greater	24,131	5,395	15.2	3.9
Not Stated...........	1,504	1,814	0.9	1.3
Total................	159,058	138,802	99.9	100.1

FIGURE 1.4 First Births as a Percentage of all Live Births
Michigan and United States Residents
1960-1978

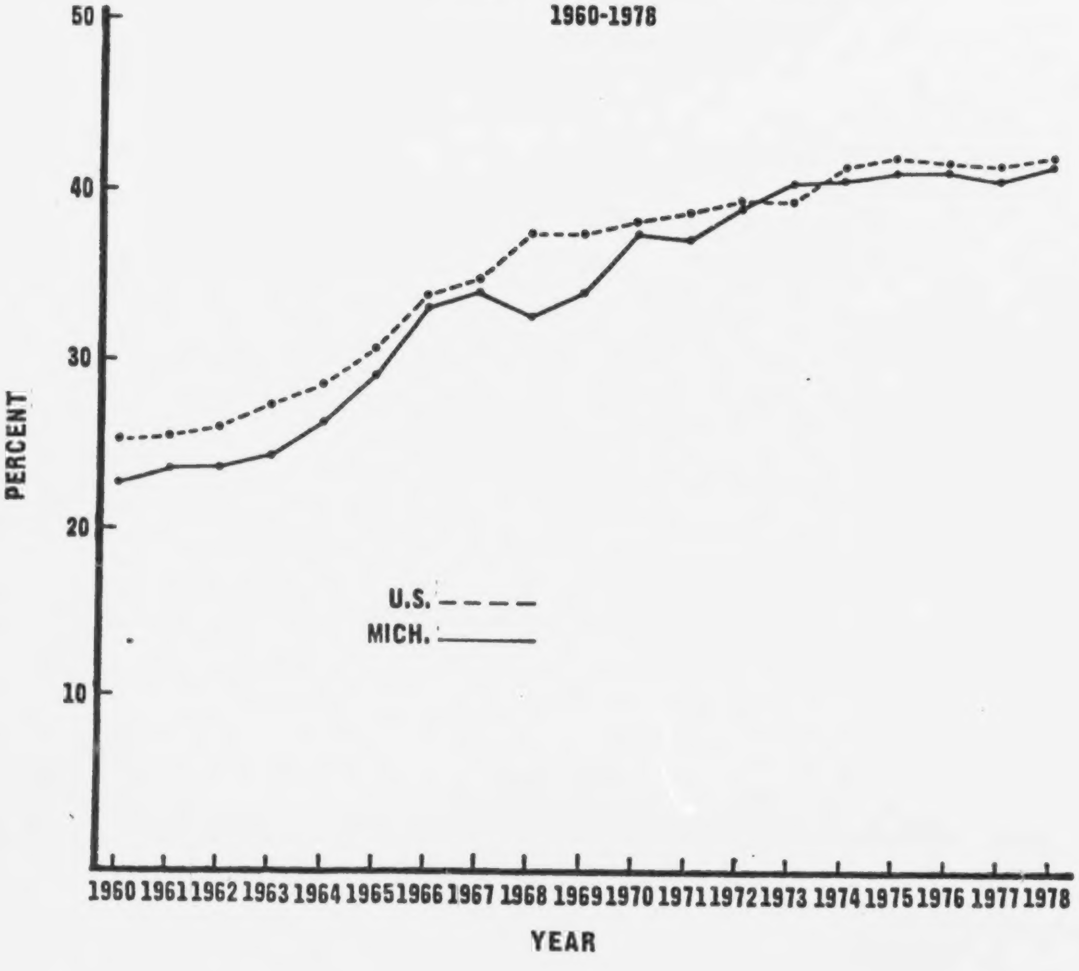

TABLE 1.10 - First Births,
Michigan and United States Residents, 1968 - 1978

UNITED STATES		YEAR	MICHIGAN	
FIRST BIRTHS	PERCENT OF ALL BIRTHS		FIRST BIRTHS	PERCENT OF ALL BIRTHS
1,311,460	37.5	1968	52,147	32.8
1,353,278	37.6	1969	56,497	34.1
1,430,680	38.3	1970	64,222	37.4
1,375,668	38.7	1971	60,413	37.2
1,289,257	39.6	1972	57,477	39.1
1,243,358	39.6	1973	57,411	40.6
1,314,194	41.6	1974	56,233	40.9
1,319,126	42.0	1975	55,348	41.3
1,324,811	41.8	1976	54.003	41.1
1,387,143	41.7	1977	56,622	40.9
1,401,491	42.0	1978	57,767	41.6

TABLE 1.11 - Live Births by Live Birth Order and Age of Mother
Michigan Residents, 1970

LIVE BIRTH ORDER	AGE OF MOTHER							
	UNDER 20 YEARS	20-24 YEARS	25-29 YEARS	30-39 YEARS	40 AND OVER YEARS	NOT STATED	ALL AGES	MEDIAN AGE AT LAST BIRTHDAY
First Birth	24,061	29,099	9,017	1,918	119	8	64,222	21
Second Birth	5,221	23,776	13,918	3,817	142	1	46,875	23
Third Birth	813	9,267	12,261	5,551	227	-	28,119	26
Fourth Birth	119	2,623	6,400	5,407	324	2	14,875	28
Fifth Birth or Greater	13	1,060	4,634	10,188	1,527	1	17,424	32
Not Stated	26	67	32	26	2	-	153	23
All Birth Orders	30,253	65,892	46,262	26,907	2,341	12	171,667	24

TABLE 1.12 - Live Births by Live Birth Order and Age of Mother

Michigan Residents, 1978

LIVE BIRTH ORDER	AGE OF MOTHER							
	UNDER 20 YEARS	20-24 YEARS	25-29 YEARS	30-39 YEARS	40 AND OVER YEARS	NOT STATED	ALL AGES	MEDIAN AGE AT LAST BIRTHDAY
First Birth........	17,290	23,501	13,361	3,543	62	10	57,767	22
Second Birth.......	3,840	17,831	16,192	6,421	67	5	44,356	25
Third Birth........	516	5,789	9,101	5,980	100	-	21,486	27
Fourth Birth.......	57	1,370	3,118	3,353	84	2	7,984	29
Fifth Birth or Greater	10	405	1,346	3,188	445	1	5,395	32
Not Stated.........	119	602	626	444	21	2	1,814	26
All Birth Orders	21,832	49,498	43,744	22,929	779	20	138,802	24

The percent of all first births occurring to women 25 years of age or older increased from 17.8 to 29.4 between 1970 and 1978. Second births occurring after age 25 increased from 38.3 percent to 51.1 percent. This change in mother's age at birth is reflective of the emergence since 1977 of the 25-29 age group as the group with the highest age-specific birth rate (Table 1.7).

INTERPREGNANCY TIME PERIOD

Paralleling decreasing birth rates and a change in the birth order distribution, there has been a lengthening of the time period between pregnancies for women having live births. In 1970, 50 percent of all live births to women with prior terminations were reported as being spaced at least 2 years and 7 months apart. The median value in 1978 was 2 years and 8 months, 3.2 percent greater than in 1970 (Table 1.13). The relative percentages of birth spacings of less than one year, 1 to 2 years, and 2 to 3 years have all declined over this period. The effect of a lengthened interval between terminations is a shortrun reduction in live births. Long range decreases in fertility can only result from a sustained decrease in the average number of children born per woman through her lifetime.

In 1978, women having live births whose prior termination was a fetal death had a median time span of 1 year and 9 months between their previous termination and a live birth (Table 1.14). This compares to a median of 2 years 10 months for prior live births. Although 1 to 2 years was the modal time span for both groups, the percent of women with prior fetal deaths in this interval (47.5) was much larger than that for women with prior live births (36.4). The greatest relative difference was associated with time spans of less than one year. A spacing of less than one year was observed for 12.2 percent of all women reporting their most recent prior pregnancy as a fetal death. This compares to 1.7 percent of all women reporting their most recent prior pregnancy as a live birth.

TABLE 1.13 - Live Births to Mothers Reporting Previous Pregnancy Terminations[1] by Time Span Between Last and Current Termination, Michigan Residents, 1970 and 1978

TIME SPAN IN YEARS	1970		1978	
	NUMBER	PERCENT	NUMBER	PERCENT
Total.................	108,516	100.0	82,400	100.1
Less than One..........	3,960	3.6	2,847	3.5
1 < 2..................	34,715	32.0	24,723	30.0
2 < 3..................	26,589	24.5	19,957	24.2
3 < 5..................	25,784	23.8	19,916	24.2
5 or More..............	17,468	16.1	14,957	18.2
Median Time Span.......	2 yrs. 7 mos.	000	2 yrs. 8 mos.	000

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[1] Terminations with time spans of zero years (i.e., second or later births in plural deliveries) and terminations with unknown time spans are excluded.

TABLE 1.14 - Live Births to Mothers Reporting Previous Pregnancy Terminations[1] by Time Span Between Last and Current Termination, and by Whether Prior Termination Resulted in a Live Birth or a Fetal Death[2], Michigan Residents, 1978

TIME SPAN IN YEARS	LIVE BIRTHS		PRIOR FETAL DEATHS		PRIOR LIVE BIRTHS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL	82,400	100.1	13,994	100.1	68,406	100.0
Less than One	2,847	3.5	1,703	12.2	1,144	1.7
1 < 2	24,723	30.0	6,647	47.5	18,076	36.4
2 < 3	19,957	24.2	2,539	18.1	17,418	25.5
3 < 5	19,916	24.2	1,969	14.1	12,947	26.2
5 or More	14,957	18.2	1,136	8.1	13,821	20.2
Median Time Span	2 yrs. 8 mos.	000	1 yr. 9 mos.	000	2 yrs. 10 mos.	000

[1] Terminations with time spans of zero years (i.e., second or later births in plural deliveries) and terminations with unknown time spans are excluded.

[2] Fetal death , as defined for the pregnancy history on the birth record, is a fetal death of any gestational age.

PRENATAL CARE

For 50,615 mothers delivering live born infants in 1978, prenatal care was initiated in the second month of pregnancy. This is about 36 percent of all women having live births. The most common number of prenatal visits was within the interval 10-14 (55.1 percent of all live births). Table 1.15 indicates the relationship between the month of pregnancy prenatal care began and the number of prenatal visits. Where care began in the first trimester, the mode for the number of visits was 10-14 while the mode for care beginning in the eighth or ninth month was under five visits.

A total of 104,512 women (75.3 percent) having live births in 1978 started their prenatal care prior to the fourth month of pregnancy. This is about the same as the 74.7 percent figure recorded in 1977. The percent of women receiving care prior to the fourth month has increased steadily since 1970 when the figure was 59.0 (Figure 1.5).

There were also small but steady increases in the percent of women receiving care prior to the sixth month of pregnancy over the period 1970-1975. In 1970, 86.0 percent of women delivering live born infants received care prior to the sixth month of pregnancy. By 1975, this had risen to 91.6 percent and in 1978 was 91.4 percent.

The time prenatal care began varied with live birth order (Table 1.16). The percent of women who began care during the first trimester was highest for second order live births (78.4) and lowest for fifth or higher order births (63.3).

The percent of mothers having ten or more prenatal visits was 65.3 in 1978, compared to 63.1 percent in 1977. This statistic varied considerably by race. While 68.8 percent of mothers of white infants had at least ten prenatal visits, only 48.9 percent of mothers of other than white infants had that many visits (Table 1.17). The median number of prenatal visits was 11 for mothers of white children and 10 for mothers of other than white children (excluding those having an unknown number of visits). The mean number of prenatal visits was 10.8 for mothers of white infants, 13.7 percent higher than the mean of 9.5 visits for mothers of infants of other races.

TABLE 1.15 - Live Births by Month Prenatal Care Began and Number of Prenatal Visits, Michigan Residents, 1978

MONTH CARE BEGAN	TOTAL	NUMBER OF VISITS						
		NONE	UNDER 5	5-9	10-14	15-19	20 AND OVER	UNKNOWN
TOTAL..........	138,802	889	6,479	36,031	76,426	11,866	2,313	4,798
No Care........	889	889	-	-	-	-	-	-
First..........	15,388	-	155	2,509	8,815	2,838	644	427
Second.........	50,615	-	469	8,154	34,001	6,059	1,026	906
Third..........	38,509	-	743	10,477	24,031	2,254	426	578
Fourth.........	15,005	-	905	6,720	6,540	456	139	245
Fifth..........	7,392	-	1,008	4,130	1,906	153	47	148
Sixth..........	3,977	-	972	2,244	614	52	14	81
Seventh........	2,356	-	934	1,183	170	16	2	51
Eighth.........	1,309	-	835	394	44	2	4	30
Ninth..........	498	-	354	64	30	6	5	39
Unknown........	2,864	-	104	156	275	30	6	2,293

FIGURE 1.5 Percent of Women Having Live Births Who Received Care Prior to the 4th Month and the 6th Month of Pregnancy, Michigan Residents, 1970-1978

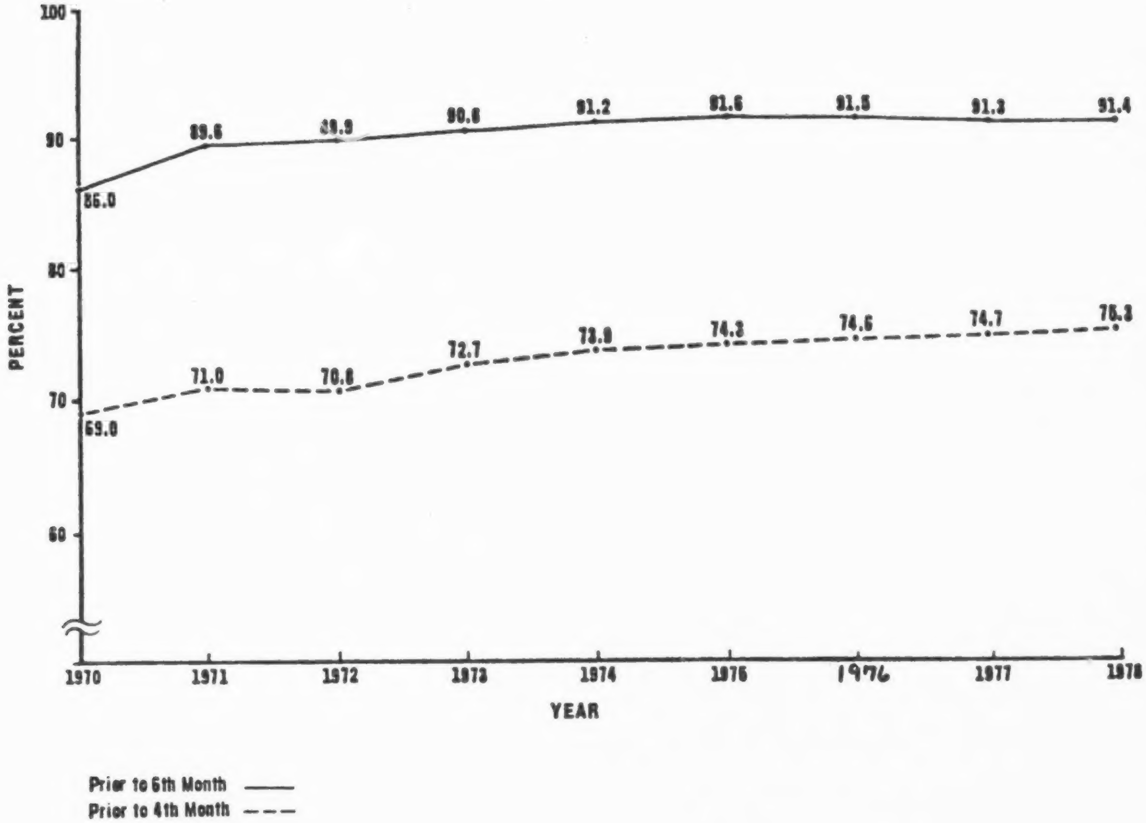

TABLE 1.16 - Live Births by Month of Pregnancy Prenatal Care Began and Live Birth Order, Michigan Residents, 1978

MONTH OF PREGNANCY CARE BEGAN	TOTAL	LIVE BIRTH ORDER					
		1ST	2ND	3RD	4TH	5TH OR GREATER	NOT STATED
TOTAL..........	138,802	57,767	44,356	21,486	7,984	5,395	1,814
No Care........	889	346	220	132	80	86	25
1st Month......	15,388	6,267	5,172	2,427	830	515	177
2nd Month......	50,615	20,867	17,220	7,881	2,594	1,462	591
3rd Month......	38,509	15,850	12,399	6,063	2,277	1,436	484
4th Month......	15,005	6,385	4,323	2,388	978	740	191
5th Month......	7,392	3,303	2,012	1,035	491	457	94
6th Month......	3,977	1,787	1,088	555	258	230	59
7th Month......	2,356	1,064	606	317	171	166	32
8th Month......	1,309	541	344	200	90	115	19
9th Month......	498	208	140	58	32	52	8
Not Stated.....	2,864	1,149	832	430	183	136	134
Percentage Beginning Care In First Trimester......	75.3	74.7	78.4	76.2	71.4	63.3	69.0

TABLE 1.17 - Live Births by Number of Prenatal Visits and Race, Michigan Residents, 1978

PRENATAL VISITS	TOTAL		RACE OF CHILD					
			WHITE		ALL OTHER		NOT STATED	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
None.....................	889	0.6	548	0.5	341	1.4	-	-
1-4.....................	6,479	4.7	4,055	3.6	2,418	9.9	6	3.4
5-9.....................	36,031	26.0	27,727	24.3	8,282	33.9	22	12.4
10-14.....................	76,426	55.1	66,702	58.4	9,691	39.7	33	18.5
15-19.....................	11,866	8.5	10,103	8.8	1,757	7.2	6	3.4
20 and Over.............	2,313	1.7	1,832	1.6	481	2.0	-	-
Not Stated..............	4,798	3.5	3,250	2.8	1,437	5.9	111	62.4
Total....................	138,802	100.1	114,217	100.0	24,407	100.0	178	100.1
Median Number of Visits.	11	000	11	000	10	000	*	000
Mean Number of Visits	10.6	000	10.8	000	9.5	000	*	000

In 1978, 889 resident live births or 6.4 of every 1,000 live births occurred without the mother having had any prenatal care. This figure includes only those where no prenatal care was specified. The comparative statistic was 6.6 in 1977 and 12.3 in 1971. Those who received no prenatal care are for the most part younger mothers (median age of 21). Also, the lack of prenatal care is disproportionately high among mothers of other than white infants. The percent of mothers of other than white children receiving no prenatal care in 1978 was 2.9 times as large as that for mothers of white children (Table 1.18).

BIRTH WEIGHT

The mean weight for all live births was 3,339 grams or approximately 7 pounds 6 ounces. The median weight was 3,374 grams or about 7 pounds 7 ounces (Table 1.19).

A subgroup of major importance when analyzing birth weight trends is the infant weighing 2,500 grams or less (approximately 5 pounds 8 ounces or less) at birth. Such infants have historically experienced higher mortality in their first year of life than heavier infants. In 1978, approximately 72 of every 1,000 live births weighed 2,500 grams or less (Table 1.20).

The proportion of low birth weight infants varies with the race of the child, the age of the mother, and the amount of prenatal care the mother has received. Note that these three factors are interrelated. Very young mothers and mothers who are not white have fewer prenatal visits; women whose race is not white have higher birth rates in the younger age groups, etc. Tables 1.20 and 1.21 present data on these three variables with respect to birth weight.

The age group with the highest low birth weight ratio (124.6) was under 15 years of age. This ratio was lower for each succeeding age group through age group 25-29 (59.7) then increased for the older age groups to 88.6 for mothers 40 years or older (Table 1.20).

The low birth weight ratio was highest when the mother had no prenatal care (272.2). The ratio declined as the number of prenatal visits increased through 15-19 visits, where the ratio was 40.2. The low birth weight ratio was 69.6 for mothers with 20 or more prenatal visits. It is likely that a very high number of prenatal visits is associated with problems

TABLE 1.18 - Live Births With No Prenatal Care by Age of Mother and Race of Child, Michigan Residents, 1978

AGE OF MOTHER	TOTAL		RACE OF CHILD					
			WHITE		ALL OTHER		NOT STATED	
	Number	Ratio[1]	Number	Ratio[1]	Number	Ratio[1]	Number	Ratio[1]
Under 15 Years............	16	46.4	7	56.0	9	41.1	-	*
15-19 Years...............	304	14.1	180	11.8	124	19.8	-	*
20-24 Years...............	319	6.4	198	4.8	121	14.3	-	*
25-29 Years...............	135	3.1	80	2.1	55	9.5	-	*
30-39 Years...............	99	4.3	71	3.7	28	7.9	-	*
40 Years and Over.........	16	20.5	12	19.6	4	24.2	-	*
Total.....................	889	6.4	548	4.8	341	14.0	-	*
Median Age at Last Birthday...............	21	000	21	000	21	000	000	000
Total Live Births.........	138,802	000	114,217	000	24,407	000	178	000

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[1] Ratio denominator obtained from table 1.6

TABLE 1.19 - Live Births by Birth Weight and Race, Michigan Residents, 1978

WEIGHT AT BIRTH	TOTAL	RACE		
		WHITE	ALL OTHER	NOT STATED
500 Grams or Less........	186	116	69	1
501-1,000 Grams..........	640	399	240	1
1,001-1,500 Grams........	921	605	316	-
1,501-2,000 Grams........	1,969	1,348	617	4
2,001-2,500 Grams........	6,297	4,312	1,977	8
2,501-3,000 Grams........	22,964	16,776	6,158	30
3,001-3,500 Grams........	50,338	41,184	9,107	47
3,501-4,000 Grams........	40,058	35,325	4,687	46
4,001-4,500 Grams........	12,532	11,499	1,018	15
4,501 Grams and Over.....	2,788	2,589	195	4
Not Stated...............	109	64	23	22
Total....................	138,802	114,217	24,407	178
Mean Weight..............	3,339	3,391	3,097	3,335
Median Weight............	3,374	3,413	3,147	3,345

TABLE 1.20 - Low Weight[1] Live Births and Ratiosby Age of Mother and Race of Child, Michigan Residents, 1978

AGE OF MOTHER	TOTAL		RACE OF CHILD					
			WHITE		ALL OTHER		NOT STATED	
	Number	Ratio[2]	Number	Ratio[2]	Number	Ratio[2]	Number	Ratio[2]
Under 15 Years............	43	124.6	13	104.0	30	137.0	-	*
15-19 Years...............	2,149	100.0	1,249	82.2	896	143.0	4	210.5
20-24 Years...............	3,587	72.5	2,462	60.1	1,120	132.6	5	82.0
25-29 Years...............	2,611	59.7	1,910	50.4	697	120.9	4	70.2
30-39 Years...............	1,552	67.7	1,098	56.8	454	127.9	-	*
40 Years and Over.........	69	88.6	47	76.7	22	133.3	-	*
Not Stated................	2	*	1	*	0	*	1	*
Total.....................	10,013	72.1	6,780	59.4	3,219	131.9	14	78.7
Median Age at Last Birthday................	24	000	24	000	23	000	*	000

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[1] 2,500 grams or less

[2] Ratio denominator obtained from Table 1.6

TABLE 1.21 - Low Weight[1] Live Births and Ratios by Number of Prenatal Visits and Race of Child, Michigan Residents, 1978

NUMBER OF PRENATAL VISITS	TOTAL		RACE OF CHILD					
			WHITE		ALL OTHER		NOT STATED	
	NUMBER	RATIO[2]	NUMBER	RATIO[2]	NUMBER	RATIO[2]	NUMBER	RATIO[2]
None	242	272.2	128	233.6	114	334.3	-	*
1-4	1,381	213.2	768	189.4	612	253.1	1	*
5-9	3,869	107.4	2,665	96.1	1,199	144.8	5	227.3
10-14	3,260	42.7	2,437	36.5	820	84.6	3	*
15-19	477	40.2	304	30.1	173	98.5	-	*
20 and Over	161	69.6	118	64.4	43	89.4	-	*
Not Stated	623	129.8	360	110.8	258	179.5	5	45.0
Total	10,013	72.1	6,780	59.4	3,219	131.9	14	78.7
Median Number of Visits	8	000	9	000	8	000	*	000
Mean Number of Visits	8.5	000	8.8	000	7.8	000	*	000

[1] 2,500 grams or less

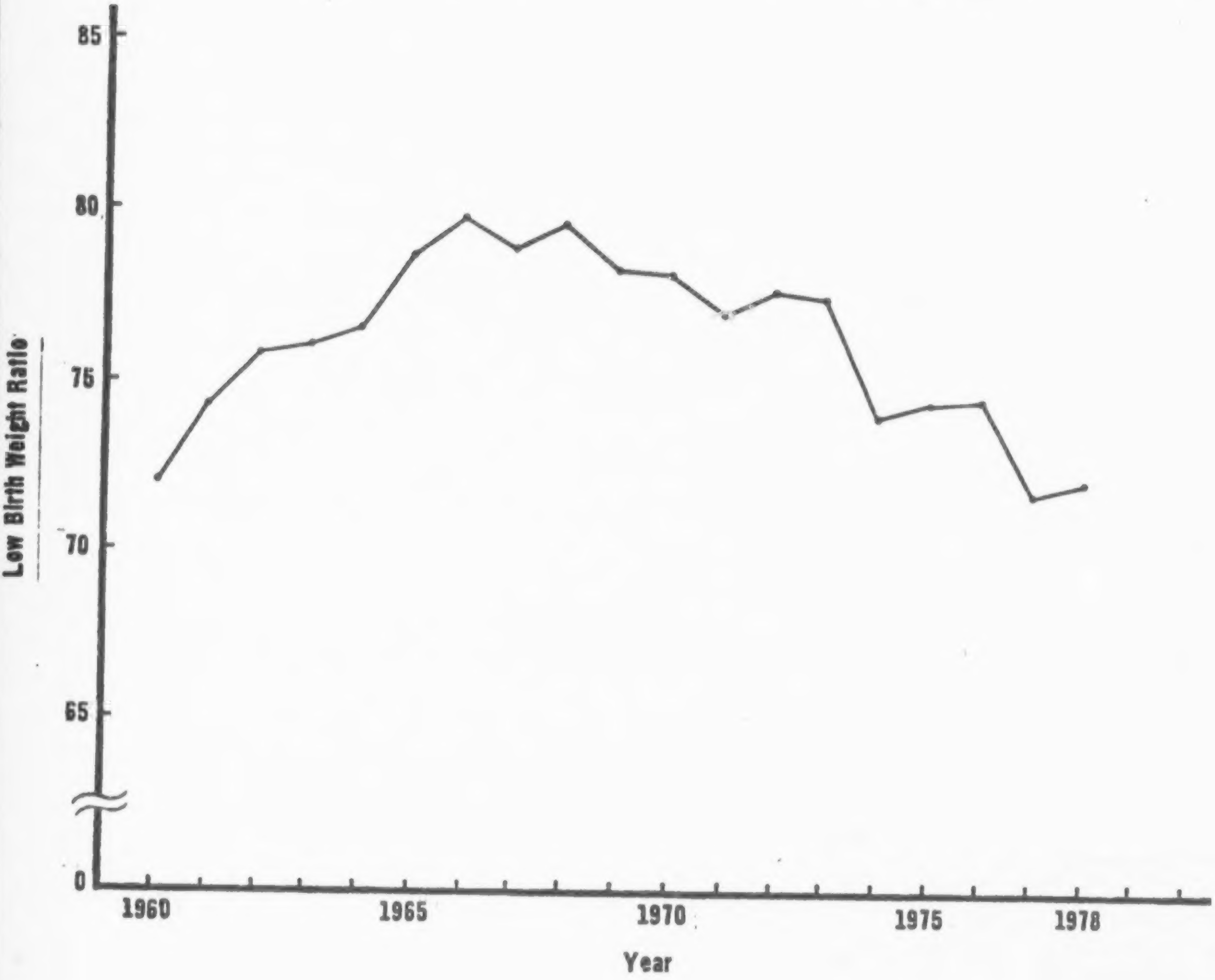
[2] Ratio denominator obtained from table 1.17

in the pregnancy (Table 1.21). In general, however, low weight infants had fewer prenatal visits than other infants. The median number of visits for low birth weight infants was 8 visits compared to 11 for all infants. The mean number of visits for low birth weight infants was 8.5 or 20 percent less than the mean of 10.6 for all infants. As low birth weight infants are more likely to have been born prematurely, the shorter prenatal period results in a reduction of the potential length of time for prenatal care.

Other than white infants have a lower mean and median birth weight than white infants (Table 1.19). The low birth weight ratio for other than white infants is 131.9 compared with 59.4 for white infants (Table 1.20). Other than white infants and white infants show similar patterns of rising and falling ratios varying with changes in the age of the mother and frequency of prenatal visits. The low birth weight ratio for other than white infants varied from a high of 334.3 where the mother had no care to a low of 84.6 where the mother had 10-14 visits. The ratio for white infants varied from a high of 233.6 where the mother had no care to a low of 30.1 where the mother had 15-19 prenatal visits (Table 1.21). Overall, the low birth weight ratio for other than white infants was 2.2 times the ratio for white infants. This is associated with a differential in the proportion of mothers having had fewer than 10 prenatal visits. While 28.3 percent of mothers having white infants had less than 10 prenatal visits, the corresponding figure for mothers having other than white infants was 45.2 percent (Table 1.17).

Figure 1.6 displays the low birth weight ratio for Michigan over the period 1960 through 1978. An examination of the graph reveals that this ratio has varied considerably over this time period. The ratio in 1960 was 72.0. Over the next five years, this statistic rose rapidly, reaching 79.8 in 1966, whereupon it remained stable through 1968. The ratio declined from 79.6 in 1968 to 77.0 in 1970, held stable through 1973 (77.4), then dropped in 1974 to 74.0. Between 1974 and 1976 the ratio rose slightly. In 1977 the ratio dropped to 71.7, the low for the period. The low birth weight ratio increased slightly in 1978 to 72.1.

FIGURE 1.6 Low Birth Weight Ratio, Michigan Residents, 1960-1978



MOTHER'S EDUCATION

Educational attainment of women having live births in 1978 varied with their age (Table 1.22). The majority (62.6 percent) of mothers aged less than 20 did not complete high school. The percent of mothers with fewer than 4 years of high school dropped to 21.3 for those aged 20-24 and to 10.4 for mothers aged 25-34. This percent increased to 17.5 for mothers aged 35-39 and to 30.9 for mothers 40 years or older. Conversely, age of mother varied with the level of education. The percent of mothers under 20 was 34.8 for those with 8 or fewer years of education, 44.0 for mothers with 9 to 11 years of schooling, 11.4 for those completing high school, 2.4 for mothers with some college, and 0.1 for those with 4 years of college. The median age of the mother was lowest (20 years) for those with 9 to 11 years of education and highest (28 years) for women with 4 or more years of college.

Birth order varies with the mother's education as well as her age. Table 1.23 indicates that the first birth ratio is generally higher with more education. The first birth ratio for mothers with 4 years of college was 46.0 compared to 33.4 for mothers with 8 or fewer years of education. Mothers with 9 to 11 years education had the lowest or second lowest first birth ratio within each age interval taken separately but the second highest total first birth ratio (43.4). This overall high ratio reflects the fact that a relatively large proportion of births to mothers with 9 to 11 years of education occurred before the age of 20.

ATTENDANT AT BIRTH

Data in Table 1.24 reveal that 99.5 percent of the live births were attended by a physician, either an M.D. or a D.O.There were 203 live births attended by a husband, while nurses delivered 144 infants and midwives and nurse-midwives delivered 50 babies.

TABLE 1.22 - Live Births by Age of Mother and Education of Mother
Michigan Residents, 1978

AGE OF MOTHER	TOTAL	MOTHER'S EDUCATION					
		8TH GRADE OR LESS	1-3 YEARS HIGH SCHOOL	4 YEARS HIGH SCHOOL	1-3 YEARS COLLEGE	4 OR MORE YEARS COLLEGE	NOT STATED
Under 20 Years	21,832	1,168	12,504	7,439	599	8	154
20-24 Years	49,498	859	9,704	28,905	8,388	1,363	279
25-29 Years	43,744	624	3,870	19,593	11,050	8,378	229
30-34 Years	18,367	437	1,520	7,175	3,882	5,241	112
35-39 Years	4,562	197	602	1,882	809	1,042	30
40 or More Years	779	68	173	333	100	101	4
Not Stated	20	1	6	6	3	1	3
Total	138,802	3,354	28,397	65,333	24,791	16,134	811
Median Age at Last Birthday	24	22	20	24	26	28	24

Table 1.23 - First Birth Ratio[1] by Age of Mother and Education of Mother, Michigan Residents, 1978

AGE OF MOTHER	TOTAL	MOTHER'S EDUCATION				
		8TH GRADE OR LESS	1-3 YEARS HIGH SCHOOL	4 YEARS HIGH SCHOOL	1-3 YEARS COLLEGE	4 OR MORE YEARS COLLEGE
Under 20 Years	79.2	70.4	76.3	84.9	87.7	100.0
20-24 Years	47.5	22.0	24.0	49.3	65.0	84.5
25-29 Years	30.5	9.9	8.8	22.9	34.5	55.1
30-34 Years	16.7	7.3	5.7	12.4	15.2	27.2
35 or More Years	10.2	5.3	3.7	7.9	10.5	19.7
Total	41.6	33.4	43.4	40.0	42.1	46.0

[1] First live births per 100 live births. Births where the mother's age and/or education are not stated are included in the denominator but are not reallocated to specific age and education categories.

TABLE 1.24 - Live Births by Type of Attendant, Michigan Residents, 1978

ATTENDANT	NUMBER	PERCENT
Total	138,802	100.0
Physician, M.D	117,463	84.6
Physician, D.O	20,719	14.9
Husband	203	0.1
Nurse	144	0.1
Midwife	43	0.0
Physician's Assistant	10	0.0
Nurse-Midwife	7	0.0
Other	197	0.1
Unknown	16	0.0

CONGENITAL ANOMALIES

One or more congenital anomalies were reported for 1,263 of the 138,802 resident live births in 1978 (Table 1.25). This translates to a rate of 909.9 per 100,000 live births. Congenital anomalies of the limbs (other than clubfoot) was the most frequently reported category, 255.8 per 100,000 live births, and comprised 28.1 percent of all anomalies mentioned. The frequency of reporting specific anomalies is affected by the reporting schedule. Many conditions may not be apparent at the time the birth certificate is completed and filed.

Figure 1.7 displays the incidence of reported congenital anomalies for Michigan resident live births over the period 1970-1978. The incidence rose from 88.3 per ten thousand live births in 1970 to 100.8 in 1973, and then declined over the last five years. The reported incidence in 1978 was 9.7 percent below the 1973 figure.

COMPLICATIONS OF PREGNANCY AND LABOR

The frequencies of complications reported on birth certificates in all three categories of complications increased during the 1970's (Figure 1.8). "Concurrent Illnesses or Conditions Affecting this Pregnancy" includes conditions of the mother that are not related to the pregnancy, but can contribute to a difficult pregnancy. In 1970, physicians reported 212.7 such complications for every 10,000 live births; in 1978, the rate was 308.2. Reported "Complications of Pregnancy", or conditions associated with the pregnancy itself, have increased from 749.9 per 10,000 live births in 1970 to 892.4 in 1978. The latter rate represents a decline of 8.9 percent from the figure observed in 1977. The most frequently reported problem of pregnancy and labor is "Complications of Labor and/or Delivery" (problems that arise during labor and delivery). In 1978, such complications were reported for about 20 percent of all live births, (a rate of 1992.9). This is 77.7 percent greater than in 1970 (1121.6) and 6.3 percent greater than in 1977. It is important to note when reviewing changes in these rates that these items are under-reported on birth certificates. Increases can be a reflection of better reporting and/or actual increases in incidence. Note also that a new live birth certificate introduced on January 30, 1978 contained new labels for the various complications categories. On the old certificate "Concurrent Illnesses or

TABLE 1.25 - Congenital Anomalies[1] Reported By Type Of Anomaly, Michigan Residents, 1978

Type of Anomaly	ICDA Number	Number of Conditions	Rate per 100,000 Live Births
Other Congenital Anomalies of Limbs	755	355	255.8
Congenital Anomalies of Congenital Organs	752	173	124.6
Cleft Palate and Cleft Lip	749	138	99.4
Congenital Syndromes Affecting Multiple Systems	759	134	96.5
Congenital Anomalies of the Heart	746	94	67.7
Clubfoot - Congenital	754	88	63.4
Congenital Anomalies of Skin, Hair, and Nails	757	70	50.4
Other Congenital Anomalies of Musculoskeletal System	756	67	48.3
Spina Bifida	741	62	44.7
Congenital Anomalies of Ear, Face, and Neck	745	42	30.3
Other Congenital Anomalies of Digestive System	751	40	28.8
Congenital Hydrocephalus	742	34	24.5
Other and Unspecified Congenital Anomalies	758	31	22.3
Other Congenital Anomalies of Upper Alimentary Tract	750	30	21.6
Other Congenital Anomalies of Circulatory System	747	28	20.2
Anencephalus	740	28	20.2
Congenital Anomalies of Urinary System	753	22	15.8
Other Congenital Anomalies of Nervous System	743	21	15.1
Congenital Anomalies of Respiratory System	748	18	13.0
Congenital Anomalies of Eye	744	7	5.0
At Least One Anomaly[2]		1,263	909.9

[1]- Indicates anomalies apparent soon after a live birth.

[2]- Does not equal the sum of anomalies specified because of reported multiple anomalies.

FIGURE 1.7 Incidence of Congenital Anomalies Reported Per 10,000 Live Births
Michigan Residents 1970-1978

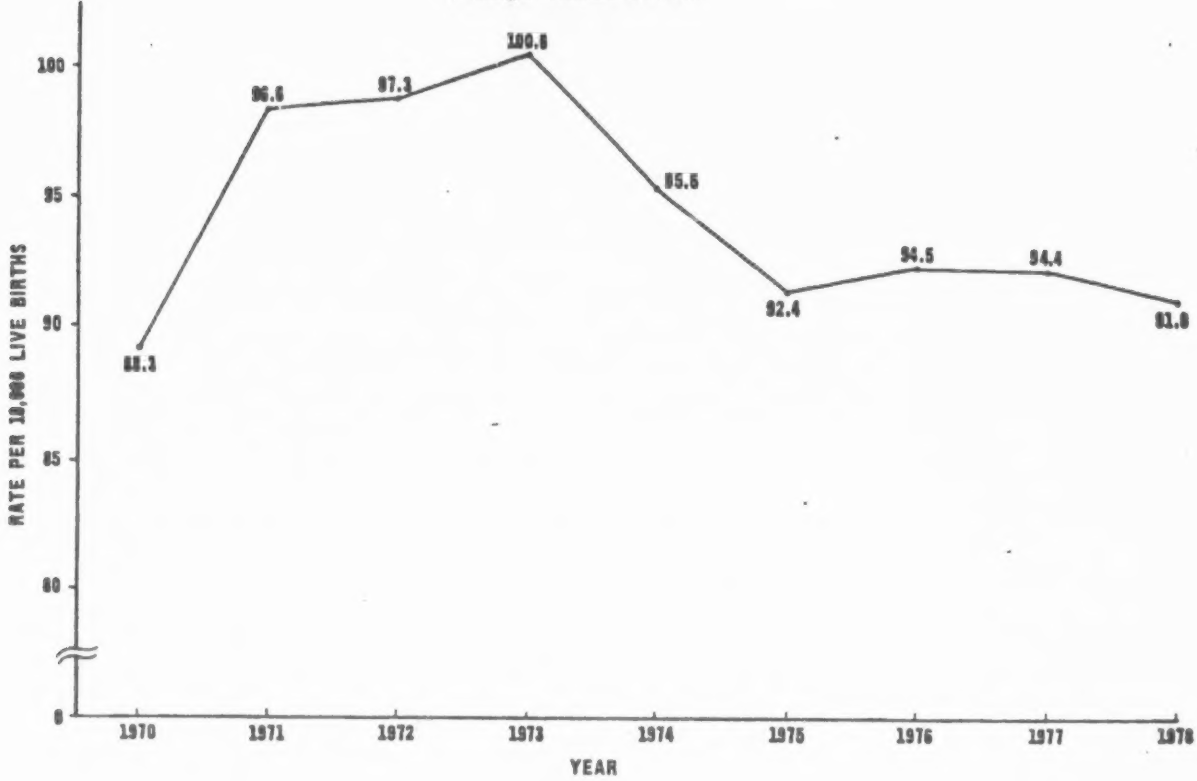
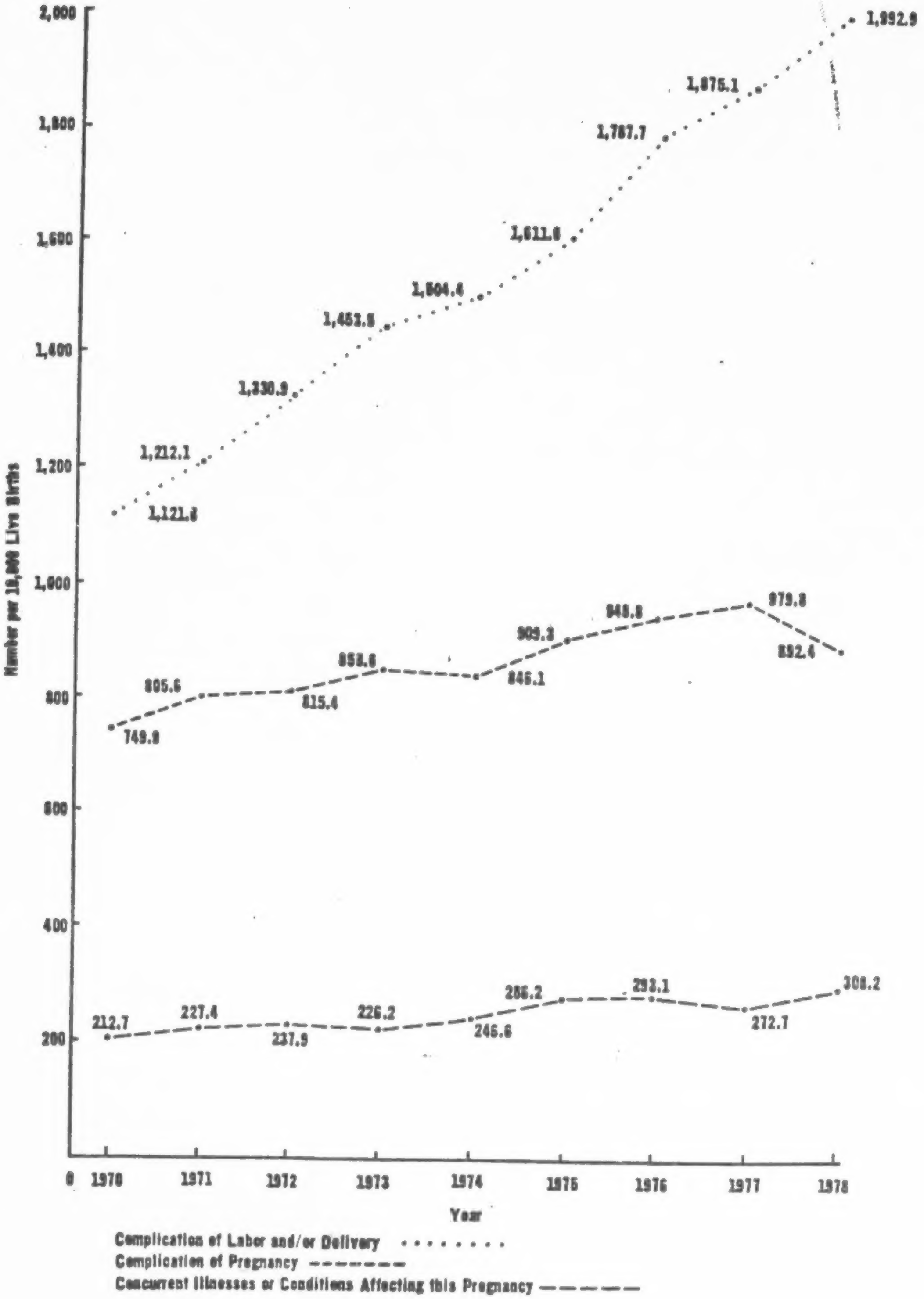


FIGURE 1.8 Incidence Rates for Complications of Pregnancy, Concurrent Illnesses or Conditions Affecting Pregnancy, and Complications of Labor and/or Delivery, Michigan Residents, 1970-1978.



"Conditions Affecting this Pregnancy" was titled "Complications Not Related to Pregnancy"; "Complications of Pregnancy" was formerly called "Complications Related to Pregnancy"; and "Complications of Labor and/or Delivery" was previously listed as "Complications of Labor".

PLACE OF OCCURRENCE

Of some confusion to persons not familiar with vital records data is the difference between occurrence and residence figures. Information on events to residents of Michigan that occur throughout the country and, in some instances, outside its boundaries is collected in order to obtain the full scope of activity for the state population. Of the total 138,802 resident live births, 1,534 occurred outside the state. Information on these events is forwarded to the state of Michigan for statistical purposes only. While only 1.1 percent of the total for the state is involved, statistics for the counties on Michigan's southern and northwestern borders would be strongly affected were this information not available.

Table 1.26 shows the four major geographic areas where Michigan resident live births occur outside the state. These four border areas comprise 89.4 percent of all resident live births that occurred out of state. Resident births occurred in 36 of the 50 states in 1978.

The number of nonresident live births that occurred in Michigan in 1978 was 628. Information about those events was shared with the appropriate states by the State of Michigan under specific confidentiality guidelines, so that they might have a complete statistical file on their residents. The border areas comprised 72.8 percent of these events, as shown in Table 1.26. There were live births in Michigan to residents of 34 states and at least five foreign countries.

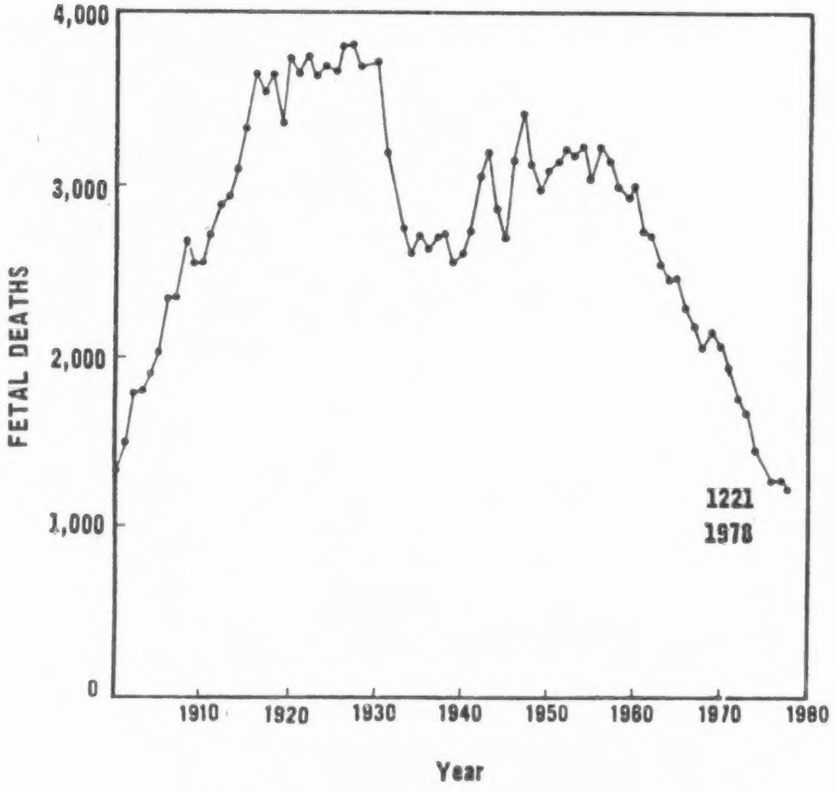
FETAL DEATHS

There were 1,325 fetal deaths reported in 1900 through the death registration system. The number of reported fetal deaths increased from 1900 through 1916. In 1916 there were 3,689 fetal deaths (Figure 1.9). The numbers of such deaths were relatively stable from 1916 through 1930, with the peak year for the period being 1927. This year marked the highest frequency of occurrence in this century with 3,834 fetal deaths. Over the period 1930 through

TABLE 1.26 - Michigan Resident Live Births Occurring Outside of Michigan by Place of Occurrence, and Live Births Occurring in Michigan to Non-Michigan Residents by Place of Residence, 1978

GEOGRAPHIC AREA	LIVE BIRTHS TO RESIDENTS OCCURRING OUTSIDE MICHIGAN		LIVE BIRTHS TO NONRESIDENTS OCCURRING IN MICHIGAN	
	NUMBER	PERCENT	NUMBER	PERCENT
Total..........	1,534	99.9	628	100.1
Indiana.........	497	32.4	135	21.5
Ohio............	398	25.9	94	15.0
Wisconsin.......	398	25.9	217	34.6
Canada..........	78	5.1	11	1.8
Other Areas.....	163	10.6	171	27.2

FIGURE 1.9 - Fetal Deaths, Michigan Residents, 1900-1978



1939, fetal deaths declined, reaching 2,572. Fetal deaths then increased through 1943, decreased in 1944 and 1945, and increased again to 3,422 in 1947. Fetal deaths numbered between 3,000 and 3,250 in the period 1948 to 1958. In the 1960's and 70's the number of fetal deaths decreased. By 1976, the number of fetal deaths fell to 1,271. the lowest number reported in this century. In 1977, there were 1,288 fetal deaths reported, and in 1978 a new low of 1,221 fetal deaths was observed.

Part of the decline in fetal deaths in 1978 is probably due to the introduction of a new reporting form on October 1, 1978. The principal responsibility for reporting a fetal death was shifted from the funeral director to the hospital or other institution where the delivery occurred. A significant decline in the number of reported fetal deaths between 1977 and 1978 for the transitional month of October can be seen in Table 1.27. There were 966 fetal deaths in the first three quarters of 1977 and 963 in the same period during 1978, whereas in the last quarter of 1977 there were 322 reported fetal deaths compared to 258 in the last quarter of 1973. Caution should be exercised, therefore, in drawing conclusions about declines in fetal mortality rates or perinatal mortality rates which are based in part on 1978 fetal death data.

The fetal death ratio for Michigan has declined through most of the twentieth century (Figure 1.10). The ratio rose from 30.3 in 1900 to 43.5 in 1905. Through the teens and early twenties, this ratio fluctuated between 38 and 42, never reaching the peak ratio observed in 1905. In 1922, Michigan's fetal death ratio was 42.0. The year 1922 marks a turning point, as fetal death ratios have generally declined since this year. The low ratio of 1900 was first succeeded by a new low ratio in 1936 (29.7). Over the next 40 years, new lows have been established repeatedly, as the fetal death ratio continued to decline. The ratio in 1978 was 8.8, the lowest observed in this century.

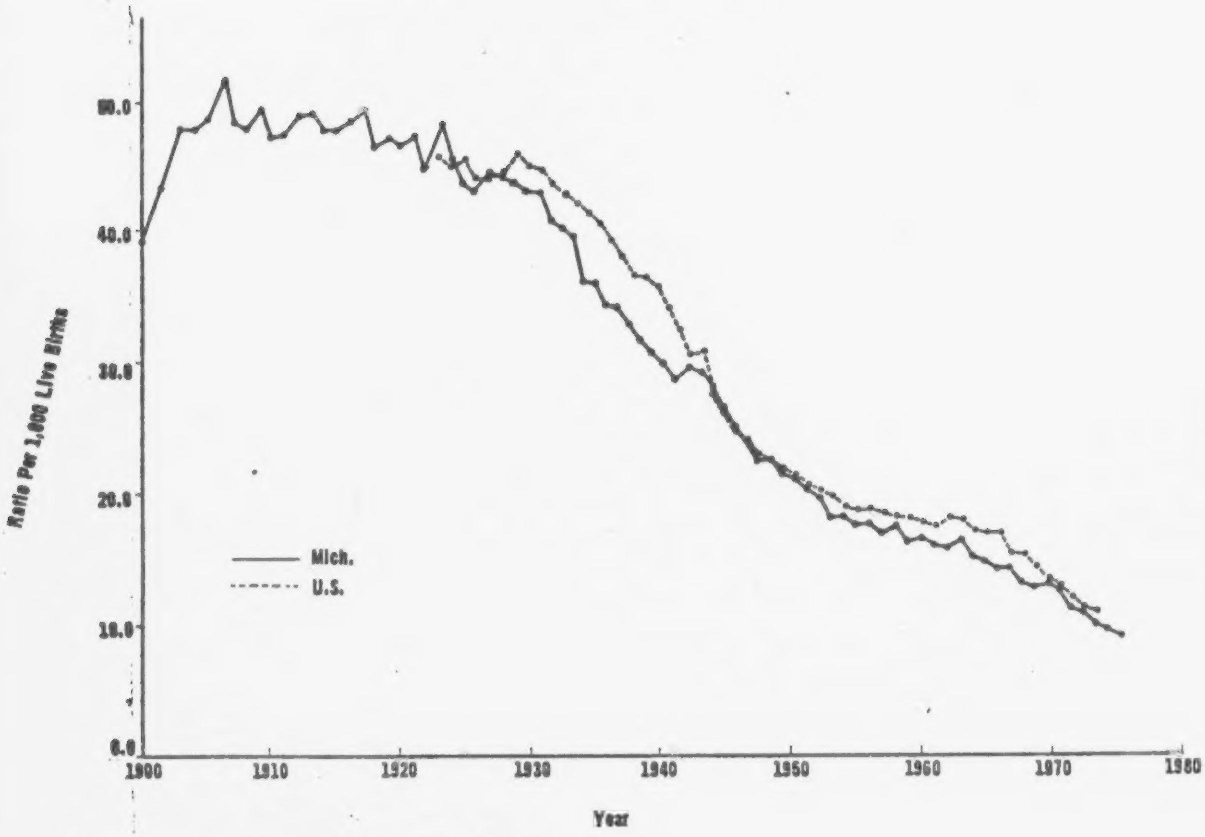
National fetal death data are presented in Figure 1.10 and Table 1.28. Michigan's fetal death ratios have generally been below national ratios. In fact, the United States ratio has been below that for Michigan in only six of the 55 years for which national data are available. The last time the United States ratio was below the Michigan ratio was in 1947. In 1976, the Michigan ratio was 7.6 percent below the national ratio of 10.5. It

Table 1.27

Fetal Deaths by Month of Occurrence, Michigan Residents, 1977-1978

	Total	Jan	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1977	1,288	106	92	109	116	110	109	129	92	103	117	114	91
1978	1,221	120	98	113	109	86	106	98	124	109	69	104	85

FIGURE 1.10 - Fetal Death Ratios, Michigan Residents, 1900-1978, and United States Residents, 1922-1976



1. U.S. Rates Prior to 1922 are not Available
2. U.S. Rates Prior to 1933 are for Registration Areas Only.

TABLE 1.28 - Fetal Deaths and Fetal Death Ratios, Michigan and United States Residents, 1900-1978

UNITED STATES		YEAR	MICHIGAN	
FETAL DEATHS	FETAL DEATH RATIOS		FETAL DEATHS	FETAL DEATH RATIOS
---	---	1900	1,325	30.3
---	---	1910	2,559	39.9
70,010[1]	39.4	1920	3,770	40.9
86,466	39.2	1930	3,714	37.6
73,802	31.3	1940	2,602	26.3
68,261	19.2	1950	3,095	19.3
68,480	16.1	1960	3,008	15.4
52,961	14.2	1970	2,060	12.0
47,818	13.4	1971	1,923	11.9
41,380	12.7	1972	1,770	12.1
38,309	12.2	1973	1,682	11.9
36,281	11.5	1974	1,451	10.6
33,796	10.7	1975	1,373	10.3
33,111	10.5	1976	1,271	9.7
---	---	1977	1,288	9.3
---	---	1978	1,221	8.8

[1] Data for 1922

should be noted that fetal deaths in Michigan are comprised of stillbirths that have passed through 20 weeks gestation. This definition is different from that of some states.

CAUSES OF FETAL DEATH

A classification of fetal deaths by underlying cause of death is contained in Table 1.29. Due to a relatively large number of deaths allocated to unspecified causes, the reader should exercise caution in attempting to draw specific inferences regarding causes of death.

In 1978, 230 of the total 1,221 fetal deaths were due to unknown causes. Of the remainder nearly half (44.3 percent) were attributed to one of two general conditions. Conditions of the placenta, which would include such things as placental insufficiency, placenta previa, premature separation of the placenta, and abnormalities of the placenta, caused 235 fetal deaths. There were 169 fetal deaths due to conditions of the placenta for every 100,000 live births in 1978. Second in prevalence was conditions of the umbilical cord, causing 204 fetal deaths.

AGE OF MOTHER AND RACE OF FETUS

It appears that the younger, the older, and other than white mothers have a greater risk of delivering a stillborn fetus. The rates of fetal loss for the under 15 mother, the over 40 mother, and the other than white fetus are higher than those for other groups (Tables 1.30 and 1.31).

The overall fetal death rate per 1,000 total births (live births plus fetal deaths) was 8.7 in 1978. The rate for white fetuses was 7.4, while the fetal death rate for other races was 74.3 percent higher at 12.9. An association of maternal age with fetal death rates is apparent from Table 1.30. The 20-24 and 25-29 year age groups displayed the lowest rates. Progressively older and younger age groups displayed increasingly higher rates. Rates for other than white fetuses were higher than for white fetuses in all age intervals. The differentials ranged from 27.4 percent for women aged 15 through 19 to 180.3 percent for women aged 40 years or over.

In 1978 the median age of women having fetal deaths was identical to the median age of women having live births (Table 1.6 and Table 1.31). As suggested by the fetal death

TABLE 1.29 - Fetal Deaths and Cause-Specific Ratios by Cause of Death (Underlying), Michigan Residents, 1978

ICDA LIST NO.	CAUSE OF DEATH	FREQUENCY	RATIO[1]
740	Anencephalus	25	18.0
741	Spina Bifida	1	0.7
742	Congenital Hydrocephalus	13	9.4
743	Other Congenital Anomalies of the Nervous System	2	1.4
746	Congenital Anomalies of the Heart	3	2.2
747	Other Congenital Anomalies of Circulatory System	4	2.9
748	Congenital Anomalies of Respiratory System	2	1.4
751	Other Congenital Anomalies of the Digestive System	1	0.7
753	Congenital Anomalies of the Urinary System	1	0.7
756	Other Congenital Anomalies of Musculoskeletal System	1	0.7
758	Other and Unspecified Congenital Anomalies	11	7.9
759	Congenital Syndromes Affecting Multiple Systems	16	11.5
760	Chronic Circulatory and Genito-Urinary Diseases in Mother	3	2.2
761	Other Maternal Conditions Unrelated to Pregnancy	54	38.9
762	Toxemia of Pregnancy	50	36.0
763	Maternal Ante and Intra-Partum Infection	16	11.5
764	Difficult Labor with Abnormality of Bone, Organs, or Tissue of Pelvix	2	1.4
765	Difficult Labor with Disproportion but no Mention of Abnormality of Pelvic	3	2.2
766	Difficult Labor with Malposition of Fetus	6	4.3
768	Difficult Labor with Other and Unspecified Complications	1	0.7
769	Other Complications of Pregnancy and Childbirth	101	72.8
770	Conditions of Placenta	235	169.3
771	Conditions of Umbilical Cord	204	147.0
772	Birth Injury without Mention of Cause	2	1.4
773	Termination of Pregnancy	19	13.7
775	Hemolytic Disease of Newborn without Mention of Kernicterus	14	10.1
776	Anoxic and Hypoxic Conditions not Elsewhere Classificable	102	73.5
777	Immaturity, Unqualified	67	48.3
778	Other Conditions of Fetus or Newborn	32	23.1
779	Fetal Death of Unknown Cause	230	165.7

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[1] Ratios per 100,000 resident live births

TABLE 1.30 - Fetal Deaths, Live Births, and Fetal Death Rates by Age of Mother and Race of Fetus, Michigan Residents, 1978

AGE OF MOTHER AND RACE OF FETUS	FETAL DEATHS	LIVE BIRTHS	TOTAL BIRTHS	RATE PER 1,000 TOTAL BIRTHS
Under 15 Years......	7	345	352	19.9
White............	1	125	126	*
Other Than White..	6	219	225	26.7
Not Stated.......	-	1	1	000
15-19 Years.........	206	21,487	21,693	9.5
White............	129	15,203	15,332	8.4
Other Than White..	68	6,265	6,333	10.7
Not Stated.......	9	19	28	000
20-24 Years.........	406	49,498	49,904	8.1
White............	292	40,993	41,285	7.1
Other Than White..	101	8,444	8,545	11.8
Not Stated.......	13	61	74	000
25-29 Years.........	314	43,744	44,058	7.1
White............	221	37,924	38,145	5.8
Other Than White..	77	5,763	5,840	13.2
Not Stated.......	16	57	73	000
30-39 Years.........	245	22,929	23,174	10.6
White............	189	19,342	19,531	9.7
Other Than White..	46	3,549	3,595	12.8
Not Stated.......	10	38	48	000
40 and Over.........	26	779	805	32.3
White............	14	613	627	22.3
Other Than White..	11	165	176	62.5
Not Stated.......	1	1	2	000
Not Stated..........	17	20	37	000
White............	5	17	22	000
Other Than White..	11	2	13	000
Not Stated.......	1	1	2	000
Total...............	1,221	138,802	140,023	8.7
White............	851	114,217	115,068	7.4
Other Than White..	326	24,407	24,727	12.9
Not Stated.......	50	178	228	000

TABLE 1.31 - Fetal Deaths by Age of Mother and Race of Fetus, Michigan Residents, 1978

AGE GROUP	RACE OF FETUS							
	TOTAL	%	WHITE	%	All Other	%	NOT STATED	%
Under 15........	7	0.6	1	0.1	6	1.9	-	-
15-19............	206	16.9	129	15.2	68	21.3	9	18.0
20-24............	406	33.3	292	34.3	101	31.6	13	26.0
25-29............	314	25.7	221	26.0	77	24.1	16	32.0
30-34............	177	14.5	137	16.1	33	10.3	7	14.0
35-39............	68	5.6	52	6.1	13	4.1	3	6.0
40-44............	25	2.0	14	1.6	10	3.1	1	2.0
45 and Over......	1	0.1	-	-	1	0.3	-	-
Not Stated.......	17	1.4	5	0.6	11	3.4	1	2.0
Total............	1,221	100.1	851	100.0	320	100.1	50	100.0
Median Age.......	24	000	25	000	23	000	25.	000

rates in Table 1.30, the distributions of fetal deaths and live births by mother's age are not identical. A greater percentage of fetal deaths occurred to women under 20 and over 30 than was the case with live births. Of all fetal deaths, 17.4 percent were to women under 20, compared to 15.7 percent of all live births. Similarly, 17.1 percent of all live births were to women 30 or more years of age while 22.2 percent of all fetal deaths occurred to women 30 years of age or older.

INTERPREGNANCY TIME PERIOD AMONG FETAL DEATHS

For those women whose pregnancy terminated with a fetal death in 1978, a total of 564 reported the date of the termination of a previous pregnancy. The median interpregnancy time period was 2 years and 8 months, the same as for women having live births in 1978 (Table 1.32). Terminations resulting in fetal deaths, however, were relatively more frequent following less than a one year interval and more than a four year interval between terminations. The mean time span between terminations was 3 years and 9 months for women having fetal deaths and 3 years and 4 months for women having live births.

Table 1.33 indicates that, as with live births (Table 1.14), the outcome of the immediate prior termination has a strong influence on the interval between pregnancies. For 126 women whose prior termination was a fetal death, the median interpregnancy time span was 1 year and 8 months. For 438 women whose prior termination was a live birth, the median interpregnancy time span was 3 years and 2 months.

PRENATAL CARE - FETAL DEATHS

Of the 1,221 fetal deaths reported for 1978, 65 or 5.3 percent of the reports indicated that the mothers had no prenatal visits. The comparable percent for live births was 0.6. The percent of mothers with fewer than ten prenatal visits was 51.8 for fetal deaths and 31.3 for live births (Table 1.17 and Table 1.34).

The number of prenatal visits varied by race (Table 1.34). Mothers of white fetuses had a mean of 8.0 visits whereas those of other than white fetuses reported a mean of 6.3 visits. Note, however, that the number of prenatal visits was not stated on 23.5 percent of the reports for white fetuses and 11.6 percent of the reports for other than white fetuses.

Table 1.32 Fetal Deaths and Live Births to Mothers Reporting Prior Pregnancy Terminations[1] by Time Span Between Last and Current Terminations, Michigan Residents 1978

TIME SPAN IN YEARS	LIVE BIRTHS		FETAL DEATHS	
	NUMBER	PERCENT	NUMBER	PERCENT
Total..................	82,400	100.1	564	100.0
Less than One..........	2,847	3.5	51	9.0
1 < 2..................	24,723	30.0	153	27.1
2 < 3..................	19,957	24.2	107	19.0
3 < 5..................	19,916	24.2	110	19.5
5 or More..............	14,957	18.2	143	25.4
Median Time Span.......	2 yrs. 8 mos.	000	2 yrs. 8 mos.	000
Mean Time Span	3 yrs. 4 mos.	000	3 yrs. 9 mos.	000

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[1] Terminations with time spans of zero years (i.e., second or later births in plural deliveries) and terminations with unknown time spans are excluded.

TABLE 1.33 - Fetal Deaths[1] to Mothers Reporting Previous Pregnancy Terminations[2] by Time Span Between Last and Current Termination and by Whether Prior Termination Resulted in a Live Birth or a Fetal Death[3], Michigan Residents, 1978

TIME SPAN IN YEARS	FETAL DEATHS[1]		PRIOR FETAL DEATHS[3]		PRIOR LIVE BIRTHS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL	564	100.0	126	99.9	438	99.9
Less than One	51	9.0	33	26.2	18	4.1
1 < 2..............	153	27.1	41	32.5	112	25.6
2 < 3..............	107	19.0	28	22.2	79	18.0
3 < 5..............	110	19.5	13	10.3	97	22.1
5 or More	143	25.4	11	8.7	132	30.1
Median Time Span ..	2 yrs. 8 mos.	000	1 yr. 8 mos.	000	3 yrs. 2 mos.	000

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[1] Fetal deaths of twenty or more weeks gestation.

[2] Terminations with time spans of zero years (i.e., second or later births in plural deliveries) and terminations with unknown time spans are excluded.

[3] Fetal deaths of any gestational age.

TABLE 1.34 - Fetal Deaths by Number of Prenatal Visits and Race, Michigan Residents, 1978

PRENATAL VISITS	TOTAL		RACE					
			WHITE		ALL OTHER		NOT STATED	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
None......................	65	5.3	28	3.3	36	11.3	1	2.0
1-4.......................	191	15.6	114	13.4	74	23.1	3	6.0
5-9.......................	376	30.8	269	31.6	104	32.5	3	6.0
10-14.....................	248	20.3	190	22.3	56	17.5	2	4.0
15-19.....................	49	4.0	40	4.7	9	2.8	-	-
20 and Over	14	1.1	10	1.2	4	1.3	-	-
Not Stated...............	278	22.8	200	23.5	37	11.6	41	82.0
Total.....................	1221	99.9	851	100.0	320	100.1	50	100.0
Median Number of Visits..	7	000	8	000	6	000	*	000
Mean Number of Visits....	7.5	000	8.0	000	6.3	000	5.1	000

The fetal death rate varied with the number of prenatal visits. The rate was 68.1 for mothers with no care, 28.6 for mothers with 1-4 visits, and 10.3 for those with 5-9 visits. The fetal death rate is lowest for mothers with 10-14 visits (3.2), and increases to 4.1 and 6.0 for mothers with 15-19 and 20 or more visits, respectively. Fetal death rates for white and other than white fetuses exhibited similar patterns of association with the number of prenatal visits (Table 1.35).

Caution should be exercised in interpreting the above fetal death rates and proportions. Incomplete reporting of the number of visits occurred on 22.8 percent of the fetal death reports compared with 3.5 percent of the live birth records. It should also be kept in mind that fetal deaths are much more likely to occur preterm and this affects the possible number of prenatal visits (Table 1.36). In 1978, 29.1 percent of the reported fetal deaths occurred before 32 weeks of gestational age, and 43.6 occurred before 36 weeks. Incomplete reporting of gestational age occurred on 25.6 percent of the fetal death reports.

The month of pregnancy that prenatal care began was most frequently the second month (Table 1.37). A majority (55.1 percent) of women reported receiving care prior to the fourth month of pregnancy, with 69.2 percent receiving care prior to the sixth month. From 1970 through 1973 there was an increase in the percent of fetal deaths where the mother received care prior to the fourth and sixth month. Since 1974, these percentages have declined (Figure 1.11).

FETALWEIGHT

Among live births, the percent of infants weighing 5 pounds 8 ounces or less at birth was 7.2. The comparable percent among fetal deaths was 56.5. The distribution of fetal weight by plurality for fetal deaths is presented in Table 1.38. Note that twin and triplet deliveries are not sets, but are total occurrences and that any given set may have included live births. The percent of single delivery fetal deaths under 2,501 grams was 54.7. The comparable percent for twin deliveries was 80.7.

The fetalweight distribution is strongly associated with gestational age (Table 1.39).

TABLE 1.35 Fetal Deaths, Total Births and Fetal Death Rates by Number of Prenatal Visits and Race[1] Michigan Residents, 1978

NUMBER OF VISITS	ALL BIRTHS			WHITE BIRTHS			ALL OTHER BIRTHS		
	FETAL DEATHS	TOTAL BIRTHS	FETAL DEATH RATES	FETAL DEATHS	TOTAL BIRTHS	FETAL DEATH RATE	FETAL DEATHS	TOTAL BIRTHS	FETAL DEATH RATES
TOTAL	1,221	140,023	8.7	851	115,068	7.4	320	24,727	12.9
None	65	954	68.1	28	576	48.6	36	377	95.5
1-4	191	6,670	28.6	114	4,169	27.3	74	2,492	29.7
5-9	376	36,407	10.3	269	27,996	9.6	104	8,386	12.4
10-14	248	76,674	3.2	190	66,892	2.8	56	9,747	5.7
15-19	49	11,915	4.1	40	10,143	3.9	9	1,766	5.1
20 & Over	14	2,327	6.0	10	1,842	5.4	4	485	8.2
Not Stated	278	5,076	54.8	200	3,450	58.0	37	1,474	25.1

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[1] Race not stated included in total columns only.

TABLE 1.36 - Fetal Deaths by Gestational Age and Number of Prenatal Visits, Michigan Residents, 1978

Gestational Age in Completed Weeks	Number	Percent	Median Number of Visits
Under 20	23	1.9	1
20-23	94	7.7	4
24-27	134	11.0	5
28-31	104	8.5	6
32-35	177	14.5	8
36-39	195	16.0	10
40-43	155	12.7	11
44 or more	27	2.2	13
Unknown	312	25.6	5
Total	1,221	100.1	7

TABLE 1.37 - Fetal Deaths by Month Prenatal Care Began and by Number of Prenatal Visits, Michigan Residents, 1978

MONTH OF PREGNANCY PRENATAL CARE BEGAN	NUMBER OF VISITS							
	TOTAL	NONE	<5	5-9	10-14	15-19	20 AND OVER	NOT STATED
TOTAL...............	1,221	65	191	376	248	49	14	278
No Care.............	65	65	-	-	-	-	-	-
First Month.........	128	-	12	50	47	7	5	7
Second Month........	303	-	46	117	100	22	5	13
Third Month.........	242	-	40	105	69	14	3	11
Fourth Month........	107	-	32	46	20	5	1	3
Fifth Month.........	65	-	27	33	4	-	-	1
Sixth Month.........	35	-	16	13	5	-	-	1
Seventh Month.......	19	-	8	7	-	-	-	4
Eighth Month........	7	-	5	1	1	-	-	-
Ninth Month.........	3	-	1	-	1	-	-	1
Unknown.............	247	-	4	4	1	1	-	237

FIGURE 1.11 - Percent of Women Having Fetal Deaths Who Received Care Prior to the 4th Month and the 6th Month of Pregnancy, Michigan Residents, 1970-1978

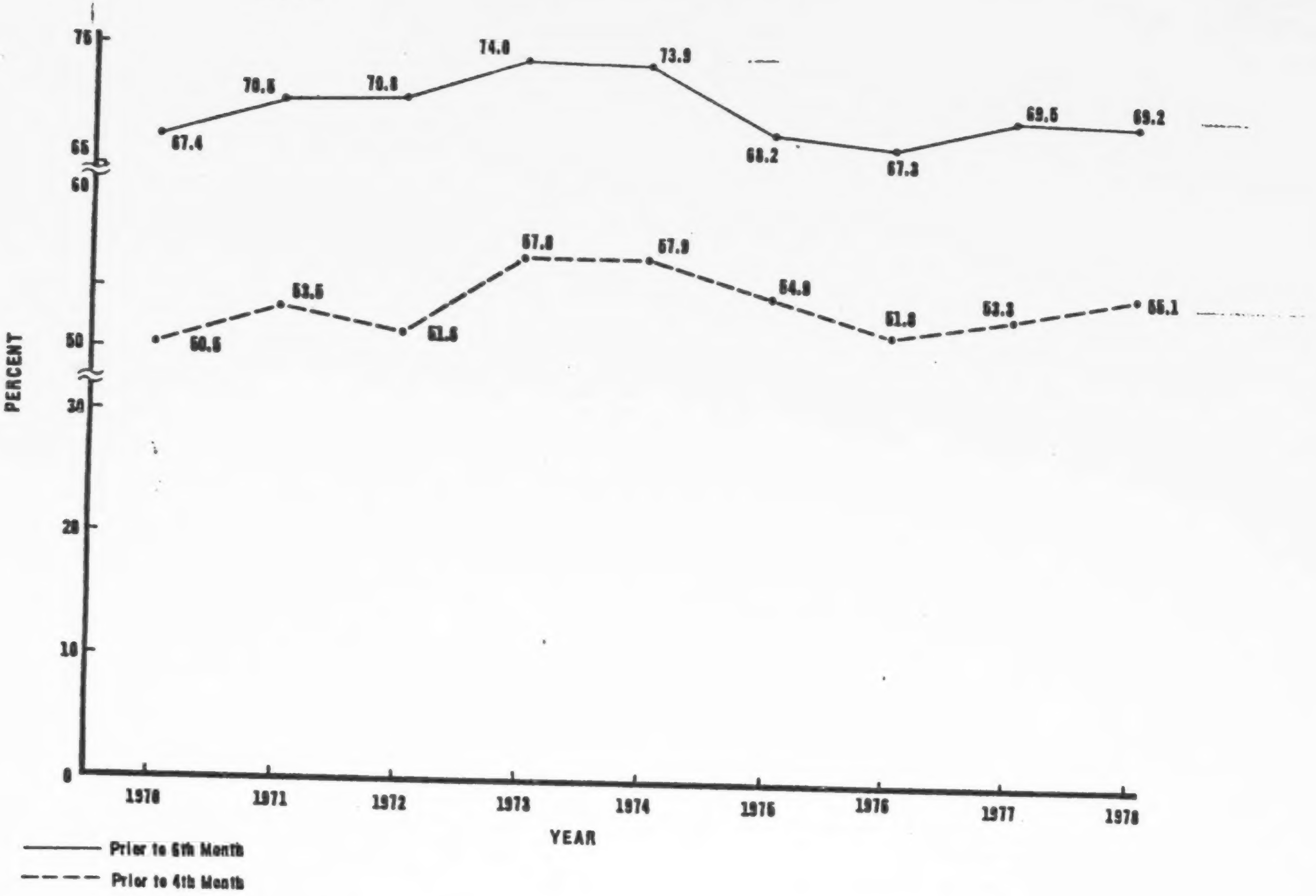

TABLE 1.38 - Fetal Deaths by Fetal Weight and Plurality, Michigan Residents, 1978

WEIGHT	FETAL DEATHS	CUM. %	SINGLE DELIVERY	TWIN DELIVERY	TRIPLET DELIVERY
500 Grams or Less.......	129	10.6	105	22	2
501-1,000 Grams.........	227	29.2	202	22	3
1,001-1,500 Grams.......	122	39.1	113	8	1
1,501-2,000 Grams.......	109	48.1	100	9	-
2,001-2,500 Grams.......	103	56.5	97	6	-
2,501-3,000 Grams.......	85	63.5	83	2	-
3,001-3,500 Grams.......	88	70.7	87	1	-
3,501-4,000 Grams.......	75	76.8	74	1	-
4,001-4,500 Grams.......	26	79.0	26	-	-
4,501-5,000 Grams.......	7	79.5	7	-	-
5,001 Grams and over....	4	80.0	3	-	-
Not Stated.............	246	100.0	231	11	2
Total..................	1221	100.0	1128	83	8

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[1] Two fetal deaths of unknown plurality included in total column only.

TABLE 1.39 - Fetal Deaths by Fetalweight and Gestational Age, Michigan Residents, 1978

Fetalweight in Grams	Gestational Age in Completed Weeks									
	Total	Under 20	20-23	24-27	28-31	32-35	36-39	40-43	44 or more	Unknown
Less than 1501	478	22	83	117	69	75	30	6	1	75
1501-2500	212	-	3	5	23	62	63	22	4	30
2501 and over	285	-	1	-	4	20	90	114	19	37
Unknown	246	1	7	12	8	20	12	13	3	170
Total	1,221	23	94	134	104	177	195	155	27	312
Median[1]	1,559	477	510	652	1,020	1,530	2,500	3,203	3,345	1,219

1 - Excluding unknown Fetalweight.

The median fetalweight for all fetal deaths was 1,559 grams compared to a median birthweight of 3,374 grams for live births. For fetuses of 32-35 weeks age, the median was 1,530 grams, while for the normal gestational age range of 36-39 weeks the median weight was only 2,500 grams.

MORTALITY

SECTION II

MORTALITY: AN OVERVIEW

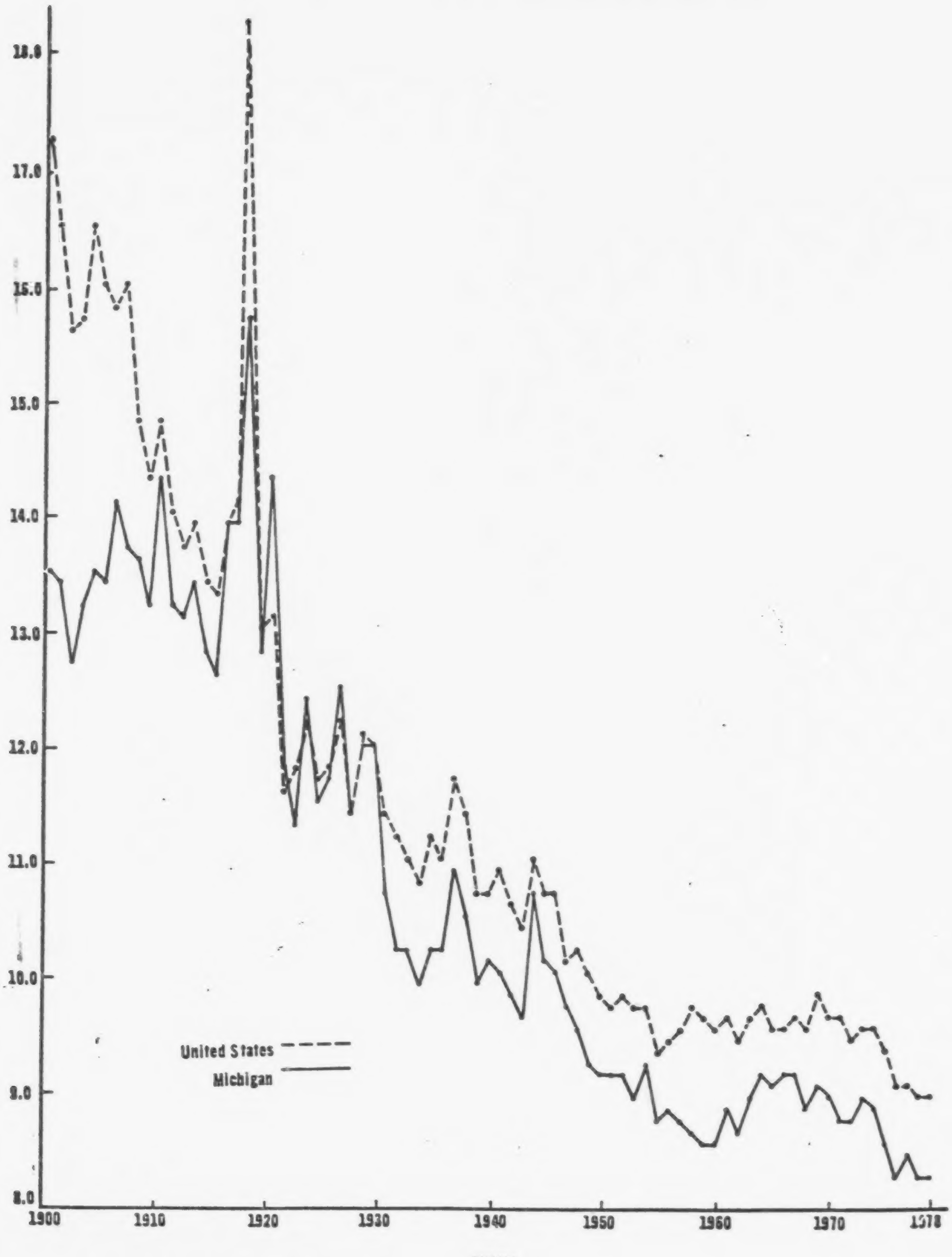
RESIDENT DEATHS	74,773
CRUDE DEATH RATE	8.1
INFANT DEATHS	1,931
INFANT DEATH RATE	13.9
NEONATAL DEATHS	1,281
NEONATAL DEATH RATE	9.2
PERINATAL DEATHS	2,322
PERINATAL DEATH RATE	16.6
MATERNAL DEATHS	15
MATERNAL DEATH RATE	1.1
DEATHS FROM HEART DISEASE PER DAY	81
DEATHS FROM CANCER PER DAY	42
DEATHS FROM STROKE PER DAY	18
DEATHS FROM ACCIDENTS PER DAY	11
MEDIAN AGE AT DEATH	71 years
MEDIAN AGE AT DEATH FOR MALES	68 years
MEDIAN AGE AT DEATH FOR FEMALES	75 years

Between 1900 and 1978 the number of deaths occurring to Michigan residents increased from 32,453 to 74,773. The 31,472 deaths recorded in 1902 was the lowest number of resident deaths in this century, while the greatest number was recorded in 1972 when total resident deaths numbered 79,210. Although the total number of deaths increased between 1900 and 1978, the crude death rate decreased from 13.4 (per 1,000 population) in 1900 to 8.1 in 1978. The 1978 rate matched the previous low crude death rate recorded for Michigan in 1975 and 1977. The highest death rate (15.6) was observed in 1918 (Figure 2.1).

Heart, cancer, and stroke deaths numbered 2,836, 1,460, and 2,136 respectively in 1900, whereas in 1978 heart, cancer, and stroke deaths numbered 29,406, 15,249, and 6,520 respectively. Although there have been significant increases in the number of deaths from these causes changes in death rates per 100,000 population have not been nearly so dramatic. Heart, cancer, and stroke cause-specific death rates in 1900 were 117.1, 60.3, and 88.2 respectively. Comparable figures for 1978 are 320.0, 165.9, and 71.0 (see Table 4.8).

A comparison of deaths and crude death rates for Michigan and the United States for the period 1968-1978 is presented in Table 2.1. The rate for Michigan has consistently been below the United States rate. Rates for both Michigan and the nation were relatively stable between 1968 and 1972 and declined moderately between 1972 and 1978. The recent decline in crude death rates both in Michigan and the nation was due to decreases in the mortality rate for several of the major causes of death, including heart disease, stroke, diabetes, accidents, cirrhosis of the liver, and influenza and pneumonia.

FIGURE 2.1 - Crude Death Rates, Michigan and United States Residents, 1900-1978[1]



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[1] 1978 United States rate is provisional

TABLE 2.1 - Number of Deaths and Crude Death Rates, Michigan and United States Residents, 1968-1978

UNITED STATES		YEAR	MICHIGAN	
NO.	RATE		NO.	RATE
1,930,082	9.4	1968	76,855	8.9
1,921,990	9.5	1969	76,693	8.8
1,921,031	9.5	1970	76,321	8.6
1,927,542	9.3	1971	77,395	8.6
1,963,944	9.4	1972	79,210	8.8
1,973,003	9.4	1973	78,522	8.7
1,934,388	9.2	1974	76,143	8.4
1,892,879	8.9	1975	74,522	8.1
1,909,440	8.9	1976	75,801	8.3
1,899,597	8.8	1977	74,144	8.1
1,924,000 Pr.	8.8 Pr.	1978	74,773	8.1

Table 2.2 presents data on the number of deaths by race for the period 1970-1978. The number of deaths for white persons decreased by 3.2 percent while deaths for black persons increased by 6.0 percent. Increases were also observed in the number of reported deaths to American Indians and persons of other races. It should be noted that the information on race is derived from the death certificates filed by funeral directors. Data from sources where race is self-enumerated, when matched with death data, indicate larger numbers of American Indians and persons of other races than reported as members of those groups on death certificates[1].

Of the 74,773 resident deaths that occurred in 1978, 41,339 occurred to males and 33,430 occurred to females (4 records had sex not stated). The median age at death for males was 68, compared to a significantly higher figure for females of 75. Deaths for white persons numbered 65,149 and accounted for 87.1 percent of all deaths. Deaths for other than white persons numbered 9,478 (Table 2.3).

The greatest number of deaths occurred to persons 75-79 years of age and the least number to persons aged 5-9. The greatest number of deaths for other than white persons occurred to persons 70-74 years of age, while deaths for white persons were most frequent at ages 80-84. Differences by sex in the mode for age at death are also evident. The most frequent age group at death was 70-74 for white males, 80-84 for white females, 60-64 for other than white males and 75-79 for other than white females. While these modal ages at death do not take into consideration differences in the age structure of each group's population, they do reflect differences in the mortality patterns of each group.

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[1] National Center for Health Statistics, Comparability of Marital Status, Race, Nationality and Country of Origin in the Death Certificate and Matching Census Record: United States, May - August, 1960 (Washington, D.C., 1969).

Table 2.2

Number of Deaths by Race[1], Michigan Residents, 1970-1978

	All Races	White	Black	American Indian	Other[2]
1970	76,321	67,270[3]	8,731	127	54
1971	77,395	67,847	9,259	128	45
1972	79,210	69,598	9,409	126	40
1973	78,522	68,502	9,641	121	54
1974	76,143	66,600	9,233	128	58
1975	74,522	65,191	9,024	118	60
1976	75,801	66,334	9,146	125	70
1977	74,144	64,816	9,038	140	53
1978	74,773	65,149	9,254	152	72

[1] Deaths with race not stated included in total column only.
Persons of Spanish or of Mexican American descent are included with whites.

[2] Includes Japanese, Hawaiian, other Asian or Pacific islander.
Indians from India were counted as "White" from 1970 - 1977
and with "Other" in 1978.

[3] Revised.

Table 2.3 - Number of Deaths by Age, Race, and Sex[1], Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	1,931	1,128	799	1,344	791	550	579	331	247	8	6	2
1-4 Years........	344	198	146	263	156	107	81	42	39	-	-	-
5-9 Years........	251	153	98	204	125	79	46	27	19	1	1	-
10-14 Years......	261	178	83	206	143	63	55	35	20	-	-	-
15-19 Years......	913	661	252	765	573	192	144	85	59	4	3	1
20-24 Years......	1,164	843	321	905	669	236	255	173	82	4	1	3
25-29 Years......	990	729	261	713	535	178	269	187	82	8	7	1
30-34 Years......	919	620	299	657	438	219	257	177	80	5	5	-
35-39 Years......	994	627	367	721	457	264	270	169	101	3	1	2
40-44 Years......	1,322	804	518	981	587	394	339	216	123	2	1	1
45-49 Years......	2,167	1,337	830	1,691	1,042	649	468	288	180	8	7	1
50-54 Years......	3,606	2,261	1,345	2,883	1,814	1,069	713	441	272	10	6	4
55-59 Years......	5,020	3,199	1,821	4,174	2,680	1,494	832	509	323	14	10	4
60-64 Years......	6,863	4,348	2,515	5,887	3,777	2,110	964	564	400	12	7	5
65-69 Years......	7,960	4,908	3,052	7,005	4,340	2,665	937	557	380	18	11	7
70-74 Years......	9,009	5,354	3,655	8,021	4,788	3,233	978	559	419	10	7	3
75-79 Years......	9,507	5,103	4,404	8,545	4,607	3,938	945	487	458	17	9	8
80-84 Years......	9,402	4,393	5,009	8,740	4,088	4,652	653	300	353	9	5	4
85-89 Years......	7,320	2,896	4,424	6,896	2,718	4,178	418	175	243	6	3	3
90 and Over......	4,829	1,598	3,231	4,548	1,498	3,050	274	99	175	7	1	6
Not Stated.......	1	1	-	-	-	-	1	1	-	-	-	-
All Ages	74,773	41,339	33,430	65,149	35,826	29,320	9,478	5,422	4,055	146	91	55
Median Age at Last Birthday	71	68	75	72	69	76	62	60	65	63	59	65

[1] Four deaths under one year of age with sex not stated (3 white, 1 other than white) are included in the total columns only.

In 1978, 26,745 deaths occurred to persons under the age of 65. This constitutes 35.8 percent of all deaths. For white males 38.5 percent of all deaths were to persons under 65 years of age. The corresponding figure for other than white males was 59.8. Similarly, for other than white females, 50.0 percent were deaths before age 65; whereas white females displayed the smallest percentage of deaths prior to age 65 (25.9 percent).

Crude, age-specific, and age-adjusted death rates by race and sex are presented in Table 2.4. The crude rate for males of 914.2 is 27.6 percent above that for females while the age-adjusted rate for males is 71.1 percent higher. The population subgroup with the lowest crude death rate is other than white females (634.0) and the highest rate was experienced by white males (916.3). Age-adjusting the data results in a quite different relationship, however, with the age-adjusted rate being lowest for white females and highest for other than white males.

The age-specific death rates for all males and all females displayed in Figure 2.2 indicate a similar pattern of rising and falling rates across the age intervals presented. The rates for males decline from birth to a low for ages 5-9 years while the rates for females decline through 10-14 years. The rates for 15-19 year olds are much higher than for 10-14 year olds in both sexes. The rates rise, decline and then rise persistently through the terminal age group (85 and over). The rates for males are consistently above those for females with the greatest relative differential occurring in the age group 25-29 years.

A comparison of 1978 death rates for males by race is graphically presented in Figure 2.3. Note that the rate for white males increased between ages 10 and 29 and then declined for ages 30-34. The rate for other than white males rose more rapidly between the ages of 15 and 29 years. Rates for other than white males were above rates for

TABLE 2.4 - Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	813.7	914.2	716.4	821.6	916.3	729.5	763.4	900.6	634.0
Under 1 Year.......	1,430.9	1,636.3	1,215.7	1,226.7	1,406.4	1,036.1	2,330.6	2,681.0	1,981.8
1-4 Years..........	61.9	69.7	53.7	56.9	65.9	47.5	86.1	88.7	83.5
5-9 Years..........	29.3	35.0	23.3	27.9	33.5	22.0	37.3	43.7	30.9
10-14 Years........	27.8	37.3	18.0	25.9	35.3	16.2	38.3	48.5	28.1
15-19 Years........	96.9	140.4	53.4	96.8	144.6	48.7	97.5	117.1	78.6
20-24 Years........	150.9	224.1	81.3	139.7	211.2	71.8	210.8	293.1	132.0
25-29 Years........	172.4	299.1	78.9	144.5	254.8	62.6	354.6	598.7	183.3
30-34 Years........	133.9	179.7	87.6	109.8	144.1	74.2	303.2	457.6	172.8
35-39 Years........	175.1	204.3	140.8	146.9	169.4	119.5	361.3	461.7	264.9
40-44 Years........	331.7	380.3	276.8	282.9	316.0	244.7	663.8	851.2	478.8
45-49 Years........	484.5	579.1	383.6	431.5	515.2	342.0	870.4	1,049.0	683.0
50-54 Years........	682.7	868.4	502.1	619.0	789.4	453.1	1,170.9	1,477.0	875.9
55-59 Years........	1,032.1	1,370.0	720.1	966.6	1,294.2	664.4	1,564.4	1,982.5	1,174.5
60-64 Years........	1,725.5	2,281.3	1,214.0	1,667.3	2,231.4	1,148.1	2,193.5	2,684.4	1,743.9
65-69 Years........	2,695.9	3,561.0	1,938.5	2,704.6	3,610.6	1,919.8	2,632.5	3,217.0	2,080.4
70-74 Years........	4,272.4	5,828.5	3,071.3	4,256.4	5,893.6	3,015.4	4,408.7	5,325.1	3,584.3
75-79 Years........	5,698.1	7,635.7	4,403.4	5,567.7	7,538.0	4,263.9	7,228.7	8,701.7	6,126.2
80-84 Years........	6,712.2	7,914.1	5,923.2	6,755.5	8,020.5	5,932.9	6,181.1	6,701.4	5,798.5
85 and Over........	13,789.5	13,898.6	13,726.2	14,304.3	14,521,7	14,180.6	8,645.3	8,381.1	8,828.4
Age-Adjusted Rate [1]	592.3	763.2	446.0	566.3	735.5	423.1	771.5	958.0	604.1

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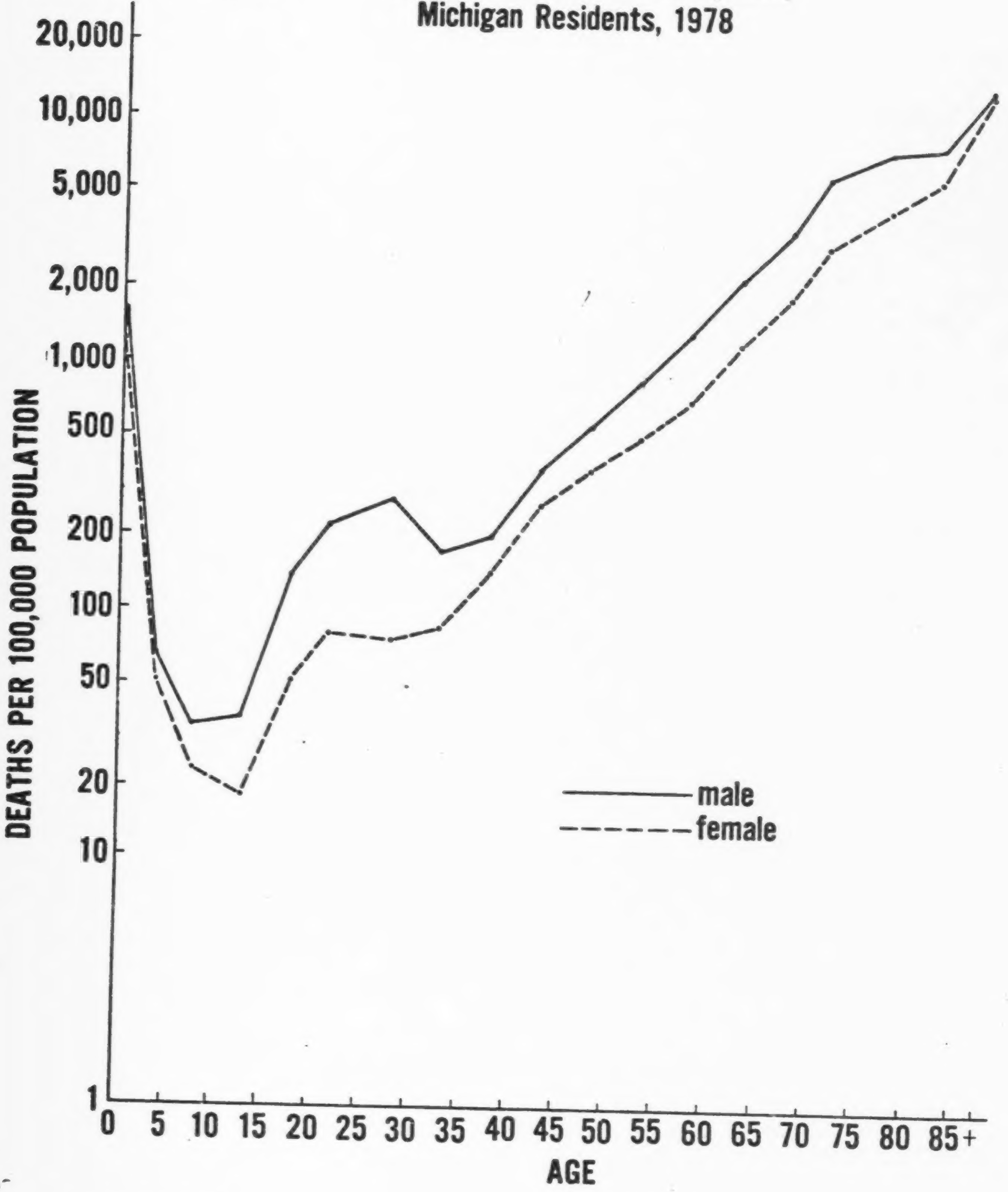
[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

Figure 2.2 Age-Specific Death Rates[1] by Sex, Michigan Residents, 1978



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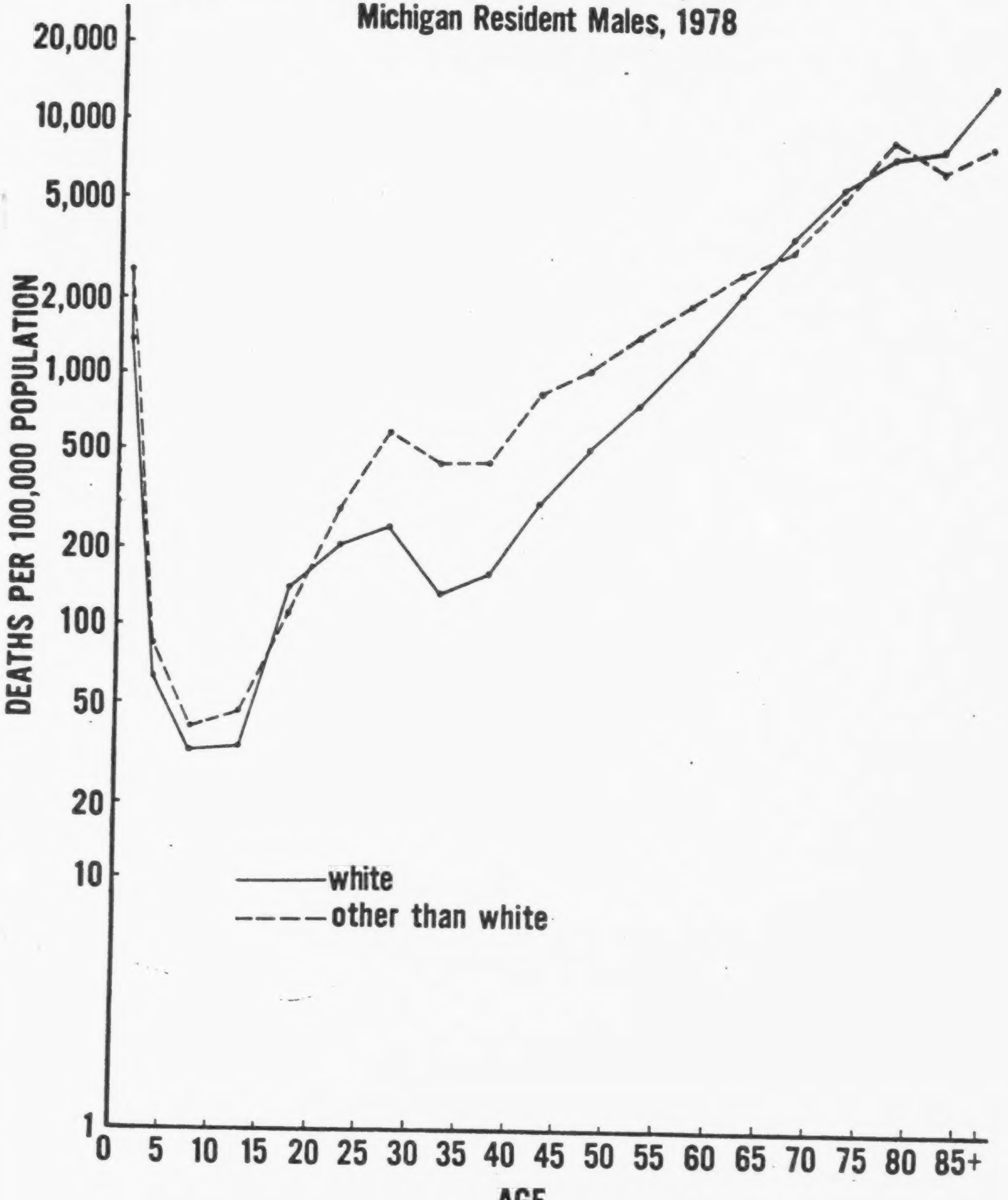
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.3 Age-Specific Death Rates[1] by Race
Michigan Resident Males, 1978



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[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

white males in the age groups between ages 0 through 14, 20 through 64 and 75-79. Between the ages of 25 and 49, rates for other than white males were about 2 to 3 times the rates for white males. The overall death rate of 900.6 per 100,000 for other than white males was slightly below the rate for white males (916.3). This is a reflection of the younger age distribution of the other than white male population.

Rates for other than white females were consistently higher than those for white females between birth and age 79 but fell below rates for white females beyond age 79 (Figure 2.4). Between the ages of 20 and 54, the rate for other than white females ranged between 1.8 and 2.9 times the rate for white females. The death rate for all ages was 729.5 for white females and 634.0 for other than white females, reflecting the greater concentration of the white female population in the older age intervals with relatively high death rates.

To compensate for the observed differences in population structure, Table 2.5 presents age-adjusted death rates by race and sex. Age-specific rates for the total population and for each subgroup were applied to a standard population distributed by age. The standard population selected was the 1940 United States enumerated population. Comparisons can be made between subgroup rates, between rates in different years, and between rates for Michigan and similarly computed rates for the United States.

Age-adjusted rates for other than white persons have been considerably higher than comparable rates for white persons throughout the 1970's. Age-adjusted rates for other than white males ranged between 30 and 41 percent higher than comparable rates for white males in Michigan. For females this differential is even greater with the rate for other than white women exceeding that for white women by

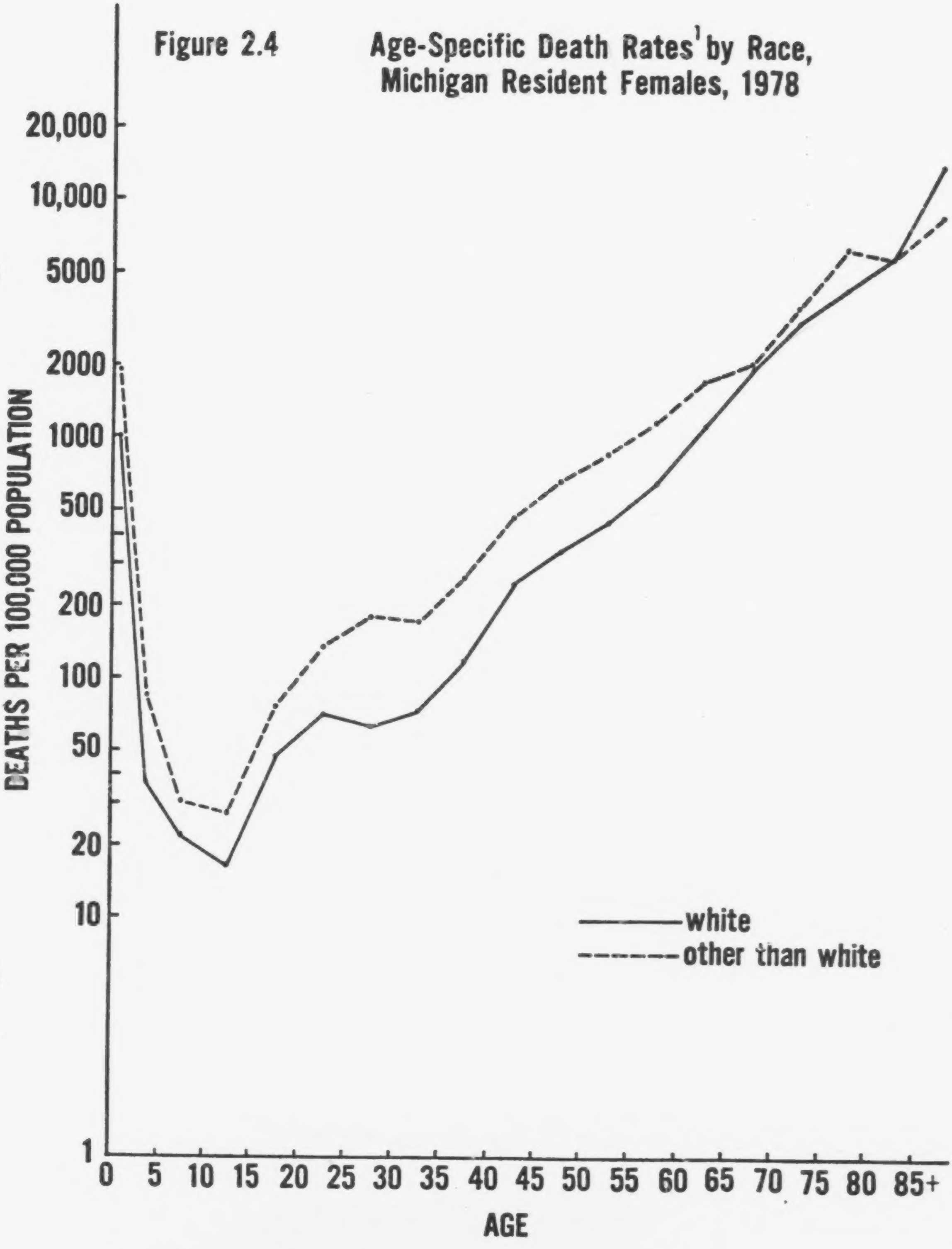

Figure 2.4 Age-Specific Death Rates[1] by Race, Michigan Resident Females, 1978

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[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Table 2.5

Age-Adjusted Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	713.2	923.7	532.1	680.6	886.3	505.0	963.3	1,207.2	744.7
	1971	704.3	918.1	520.9	668.3	876.0	492.0	972.7	1,226.4	744.1
	1972	711.0	925.6	527.1	676.5	885.4	499.3	958.9	1,215.1	727.7
	1973	695.6	903.1	516.6	659.3	860.2	487.8	953.1	1,212.6	719.5
	1974	658.2	854.4	488.7	626.0	815.6	464.1	882.5	1,128.5	659.5
	1975	630.2	815.5	469.6	600.3	777.2	448.1	838.0	1,085.8	614.5
	1976	619.1	800.1	462.8	590.5	765.4	441.2	815.4	1,042.0	609.3
	1977	600.7	780.7	445.8	574.5	750.9	424.6	781.1	987.6	593.9
	1978	592.3	763.2	446.0	566.3	735.5	423.1	771.5	958.0	604.1
U.S.	1970	714.3	931.6	532.5	679.6	893.4	501.7	983.4	1,231.4	770.8
	1971	703.4	914.3	526.4	668.5	874.9	496.2	1,003.0	1,257.7	785.9
	1972	701.8	921.9	520.0	667.6	883.2	490.8	965.4	1,227.2	745.0
	1973	692.9	911.7	513.1	659.3	874.1	483.7	953.1	1,206.7	738.9
	1974	666.2	877.8	492.9	635.4	843.0	466.4	901.3	1,149.1	693.1
	1975	638.3	845.3	469.3	609.8	812.7	445.3	852.4	1,097.5	648.3
	1976	627.5	830.2	462.9	599.9	798.8	439.6	833.7	1,072.1	635.1
	1977	612.3	811.9	450.6	585.4	781.5	427.8	814.0	1,045.9	621.3
	1978	605.5Pr.	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

37 to 51 percent. There was, however, a small reduction in the size of the differential in the past few years.

Declines have occurred both in Michigan and the United States in age-adjusted rates in each race-sex subgroup in the 1970's. Michigan's age-adjusted rate for the population as a whole declined by 17.0 percent between 1970 and 1978 while the estimated decline for the United States was 15.2 percent. Although age-adjusted rates for white females in Michigan are comparable to rates for white females observed nationally, the rates for white males and for other than white males and females in Michigan have been somewhat below those for the nation in the past several years.

For the population as a whole, Michigan's age-adjusted rate was below that for the United States in 1970, above the national rate between 1971 and 1973 and below the U.S. figure since 1974. Note the contrast with the crude rates presented in Table 2.1, with Michigan consistently below the United States throughout the period. In the past five years, Michigan's crude rate was between 6.7 and 9.0 percent below the crude rate for the United States while the age-adjusted rate ranged between 1.2 and 2.2 percent below the comparable national figure.

LEADING CAUSES OF DEATH

In 1978, 84.6 percent of all deaths were attributed to one of the ten leading cause of death categories. These principal causes of death in Michigan in 1978 remained much the same as they have in the recent past. The number of deaths and the death rates for the 10 leading causes are shown in Table 2.6, and the percentage of total deaths resulting from each of these causes is illustrated in Figure 2.5.

There has been no change in the first four rankings over the 28 years since 1950. The ranking of 5th and 6th have been held by diabetes mellitus and influenza and pneumonia, with influenza and pneumonia ranking 5th in 19 of the 29 years from 1950 through 1978. Cirrhosis of the liver was not among the ten leading causes of death in 1950. This cause ranked 10th in 1954 and has been among the ten most frequent causes consistently since 1960, gradually moving from 10th to 7th. Arteriosclerosis has consistently been among the ten leading causes of death, ranking 7th in 1950 and 8th in 1978. The ranking of suicide in the top ten is fairly recent. Suicide first ranked in the top ten in 1964 when it was the 10th leading cause. The tenth leading cause of death in 1978, homicide, first appeared on the list of ten leading causes in 1972 when it was ranked 9th. In 1978, six of the ten leading causes of death were chronic conditions, one was an acute disease category and three were external non-disease groupings.

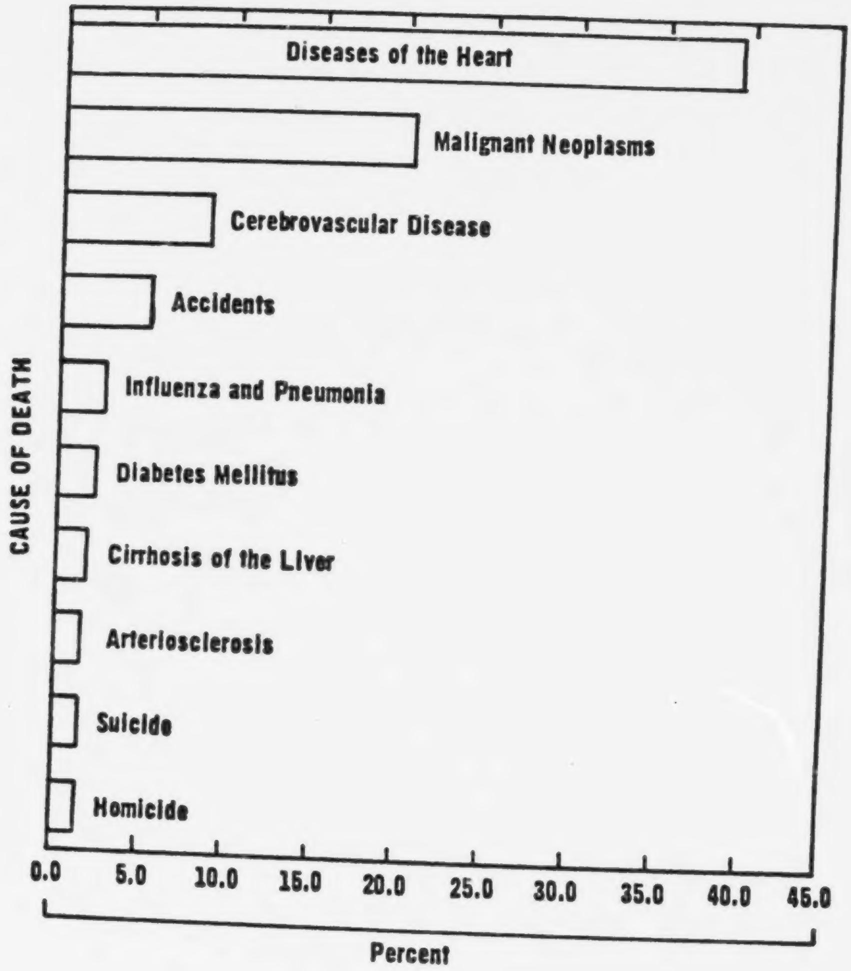
While the four leading causes of death have not changed since 1950, influenza and pneumonia and diabetes mellitus have alternately ranked 5th and 6th during the 1970's, with influenza and pneumonia ranking 5th in the past four years.

TABLE 26 - Leading Causes of Death and Cause-Specific Rates
Michigan and United States Residents, 1978

RANK	CAUSE OF DEATH	NUMBER OF DEATHS		RATE	
		MICHIGAN	U.S.[1]	MICHIGAN	U.S.[1]
1	Diseases of the Heart	29,406	728,190	320.0	333.9
2	Malignant Neoplasms	15,249	396,060	165.9	181.6
3	Cerebrovascular Diseases	6,520	172,520	71.0	79.1
4	Accidents	3,970	107,930	43.2	49.5
5	Influenza and Pneumonia	2,003	58,290	21.8	26.7
6	Diabetes Mellitus	1,551	32,780	16.9	15.0
7	Cirrhosis of the Liver	1,351	29,910	14.7	13.7
8	Arteriosclerosis	1,146	29,190	12.5	13.4
9	Suicide	1,132	27,500	12.3	12.6
10	Homicide	931	21,080	10.1	9.7
	Sub Total	63,259	1,603,450	688.4	735.5
	All Other Causes	11,514	320,550	125.3	147.0
	Total	74,773	1,924,000	813.7	882.3

[1] United States figures are provisional.

FIGURE 2.5 Leading Cause of Death, Michigan Residents, 1978



Cirrhosis of the liver has ranked 7th since 1969. Arteriosclerosis and suicide have alternately ranked 8th, 9th and 10th during the past six years.

No major changes in the order of the ten leading causes of the United States occurred in 1978. Certain differences between the United States figures and those of Michigan should be noted. The overall Michigan death rate is significantly lower than the national rate. Some cause-specific rates are, however, higher than comparative national rates. These causes are diabetes mellitus, cirrhosis of the liver and homicide.

While the most frequent causes of death among all Michigan resident deaths have changed little in recent years, this does not imply similarity in the leading causes of death among residents at different ages, of different sexes or different races. Table 2.7 contains the five most frequent causes of death by age, sex and race. Careful examination of this table discloses that major differences in the leading causes of death are associated with these three characteristics. No single cause of death is among the most frequent causes in all categories. Malignant neoplasms and accidents have the most widespread significance, each being present in 16 of the 32 age-sex-race groupings. Heart disease, the most frequent cause of death in the state, is one of the five leading causes of death in 23 of the 32 individual cross classifications. The variation in leading causes of death by age is most evident among deaths to infants under one year. This category has little similarity to any other age group. External causes of death, including accidents, suicide and homicide, are predominant among persons 1 through 34 years of age. At age 35 years or over, chronic conditions are responsible for the largest percentage of deaths.

TABLE 7.7
Leading Causes of Death and Cause-Specific Rates
By Age, Sex, and Race, Michigan, 1978

TOTAL[1]

Age	Rank and Cause of Death	Number	Specific Rate
All Ages	1. Diseases of the Heart	29,406	320.0
	2. Malignant Neoplasms	15,249	165.9
	3. Cerebrovascular Disease	6,520	71.0
	4. Accidents	3,970	43.2
	5. Influenza and Pneumonia	2,003	21.8
	All Causes	74,773	813.7
Under 1 year	1. Certain Diseases of Early Infancy (Birth Injury - 58) (Asphyxia of Newborn - 115) (Immaturity Unqualified - 152) (Other - 613)	938	695.1
	2. Congenital Anomalies	347	257.1
	3. Sudden Infant Death	252	186.7
	4. Accidents	50	37.1
	5. Influenza and Pneumonia	47	34.8
	All Causes	1,931	1,430.9
1-4 Years	1. Accidents	148	26.6
	2. Congenital Anomalies	37	6.7
	3. Malignant Neoplasms	27	4.9
	4. Influenza and Pneumonia	20	3.6
	5. Homicide	16	2.9
	All Causes	344	61.9
5-14 Years	1. Accidents	272	15.1
	2. Malignant Neoplasms	66	3.7
	3. Congenital Anomalies	29	1.6
	4. Homicide	17	0.9
	5. Influenza and Pneumonia	12	0.7
	All Causes	512	28.5
15-24 Years	1. Accidents	1,015	59.2
	2. Suicide	268	15.6
	3. Homicide	262	15.3
	4. Malignant Neoplasms	124	7.2
	5. Diseases of the Heart	53	3.1
	All Causes	2,077	121.2
25-34 Years	1. Accidents	594	47.1
	2. Homicide	277	22.0
	3. Suicide	253	20.1
	4. Malignant Neoplasms	182	14.4
	5. Diseases of the Heart	139	11.0
	All Causes	1,909	151.4

TABLE 2.7
Leading Causes of Death and Cause-Specific Rates By Age, Sex, and Race, Michigan, 1978 (Cont.)

TOTAL[1]

Age	Rank and Cause of Death		Number	Specific Rate
35-49 Years	1.	Malignant Neoplasms	1,147	81.2
	2.	Diseases of the Heart	1,097	77.6
	3.	Accidents	514	36.4
	4.	Cirrhosis of the Liver	299	21.2
	5.	Suícide	230	16.3
		All Causes	4,483	317.2
50-64 Years	1.	Diseases of the Heart	5,706	404.0
	2.	Malignant Neoplasms	4,860	344.1
	3.	Cerebrovascular Disease	839	59.4
	4.	Cirrhosis of the Liver	643	45.5
	5.	Accidents	534	37.8
		All Causes	15,489	1,096.7
65 and Over	1.	Diseases of the Heart	22,353	2,480.5
	2.	Malignant Neoplasms	8,837	980.6
	3.	Cerebrovascular Disease	5,388	597.9
	4.	Influenza and Pneumonia	1,556	172.7
	5.	Diabetes Mellitus	1,124	124.7
		All Causes	48,027	5,329.5

1 - Note subtotals by race do not add to the grand total as the race was not stated on records for 91 males and 55 females. In addition, the sex was not stated on records for 3 white persons and 1 other than white person. Age groups do not add to respective totals because records with age not stated are included in the total.

2 - Rates may not agree with those shown elsewhere in this section since records of unknown race were randomly assigned to white and other than white before rates were calculated for the other tables, and were not included in calculations for this table.

TABLE 27

Leading Causes of Death and Cause-Specific Rates By Age, Sex, and Race, Michigan, 1978

White Males[2]

Age	Rank and Cause of Death	Number	Specific Rate
All Ages	1. Diseases of the Heart	14,544	371.2
	2. Malignant Neoplasms	7,361	187.9
	3. Cerebrovascular Disease	2,448	62.5
	4. Accidents	2,395	61.1
	5. Influenza and Pneumonia	909	23.2
	All Causes	35,826	914.3
Under 1 year	1. Certain Diseases of Early Infancy (Birth Injury - 23) (Asphyxia of Newborn - 55) (Immaturity Unqualified - 59) (Other - 250)	387	638.8
	2. Congenital Anomalies	157	277.4
	3. Sudden Infant Death	101	178.4
	4. Influenza and Pneumonia	19	33.6
	5. Septicemia	18	31.8
	All Causes	791	1,397.6
1-4 Years	1. Accidents	71	30.0
	2. Congenital Anomalies	17	7.2
	3. Malignant Neoplasms	12	5.1
	4. Homicide	5	2.1
	5. See Below	4	1.7
	All Causes	156	65.9
	(Meningitis, Diseases of the Heart, Influenza and Pneumonia are all tied for 5th rank.)		
5-14 Years	1. Accidents	158	20.2
	2. Malignant Neoplasms	36	4.6
	3. Congenital Anomalies	16	2.0
	4. Homicide	6	0.8
	5. Influenza and Pneumonia	5	0.6
	All Causes	268	34.3
15-24 Years	1. Accidents	742	103.8
	2. Suicide	200	28.0
	3. Malignant Neoplasms	63	8.8
	4. Homicide	59	8.3
	5. See Below	21	2.9
	All Causes	1,242	173.7
	(Hereditary Neuromuscular Disorders and Injuries Undetermined Whether Accidentally or Purposely Inflicted are tied for 5th rank.)		
25-34 Years	1. Accidents	411	79.3
	2. Suicide	172	33.2
	3. Diseases of the Heart	75	14.5
	4. Malignant Neoplasms	74	14.3
	5. Homicide	67	12.9
	All Causes	973	187.7

Leading Causes of Death and Cause-Specific Rates
By Age, Sex, and Race, Michigan, 1978 (Cont.)

White Males[2]

Age	Rank and Cause of Death	Number	Specific Rate
35-49 Years	1. Diseases of the Heart	696	105.5
	2. Accidents	291	44.1
	3-4. Cirrhosis of the Liver	126	19.1
	Suicide	126	19.1
	5. Cerebrovascular Disease	82	12.4
	All Causes	2,086	316.2
50-64 Years	1. Diseases of the Heart	3,593	591.2
	2. Malignant Neoplasms	2,266	372.8
	3. Cerebrovascular Disease	340	55.9
	4. Cirrhosis of the Liver	324	53.3
	5. Accidents	308	50.7
	All Causes	4,673	768.9
65 and Over	1. Diseases of the Heart	10,137	2,954.3
	2. Malignant Neoplasms	4,494	1,309.7
	3. Cerebrovascular Disease	2,001	583.2
	4. Influenza and Pneumonia	710	206.9
	5. Arteriosclerosis	406	118.3
	All Causes	22,039	6,422.9

TABLE 2.7
Leading Causes of Death and Cause-Specific Rates by Age, Sex, and Race, Michigan, 1978

White Females[2]

Age	Rank and Cause of Death	Number	Specific Rate
All Ages	1. Diseases of the Heart	11,848	294.2
	2. Malignant Neoplasms	6,043	150.1
	3. Cerebrovascular Disease	3,321	82.5
	4. Accidents	1,051	26.1
	5. Influenza and Pneumonia	891	22.1
	All Causes	29,320	728.2
Under 1 Year	1. Certain Diseases of Early Infancy (Birth Injury - 17) (Asphyxia of Newborn - 30) (Immaturity Unqualified - 38) (Other - 150)	235	440.3
	2. Congenital Anomalies	126	236.1
	3. Sudden Infant Death	52	97.4
	4. Accidents	26	48.7
	5. Influenza and Pneumonia	19	35.6
	All Causes	550	1,030.4
1-4 Years	1. Accidents	36	16.0
	2. Congenital Anomalies	13	5.8
	3. Influenza and Pneumonia	12	5.3
	4. Malignant Neoplasms	9	4.0
	5. Homicide	5	2.2
	All Causes	107	47.5
5-14 Years	1. Accidents	69	9.2
	2. Malignant Neoplasms	17	2.3
	3. Congenital Anomalies	9	1.2
	4. Cystic Fibrosis	4	0.5
	5-7. See Below	3	0.4
	All Causes (Diseases of the Heart, Homicide, and Suicide are tied for 5th rank.)	142	19.0
15-24 Years	1. Accidents	194	26.6
	2. Malignant Neoplasms	45	6.2
	3. Suicide	32	4.4
	4. Homicide	27	3.7
	5. Diseases of the Heart	16	2.2
	All Causes	428	58.7
25-34 Years	1. Accidents	104	17.9
	2. Malignant Neoplasms	83	14.3
	3. Suicide	49	8.4
	4. Diseases of the Heart	24	4.1
	5. Cerebrovascular Disease	17	2.9
	All Causes	397	68.3

TABLE 7.7
Leading Causes of Death and Cause-Specific Rates By Age, Sex, and Race, Michigan, 1978 (Cont.)

White Females[2]

Age	Rank and Cause of Death	Number	Specific Rate
35-49 Years			
	1. Malignant Neoplasms	526	91.6
	2. Diseases of the Heart	184	32.1
	3. Accidents	120	20.9
	4. Suicide	74	12.9
	5. Cerebrovascular Disease	73	12.7
	All Causes	1,307	227.7
50-64 Years			
	1. Malignant Neoplasms	1,880	290.9
	2. Diseases of the Heart	1,260	194.9
	3. Cerebrovascular Disease	293	45.3
	4. Cirrhosis of the Liver	179	27.7
	5. Accidents	143	22.1
	All Causes	4,673	723.0
65 and Over			
	1. Diseases of the Heart	10,348	2,209.1
	2. Malignant Neoplasms	3,478	742.5
	3. Cerebrovascular Disease	2,921	623.6
	4. Influenza and Pneumonia	743	158.6
	5. Arteriosclerosis	648	138.3
	All Causes	21,716	4,635.9

TABLE 2.7
Leading Causes of Death and Cause-Specific Rates
by Age, Sex, and Race, Michigan, 1978

All Other Males[2]

Age	Rank and Cause of Death	Number	Specific Rate
All Ages	1. Diseases of the Heart	1,583	262.2
	2. Malignant Neoplasms	1,108	183.5
	3. Homicide	468	77.5
	4. Accidents	343	56.8
	5. Cerebrovascular Disease	324	53.7
	All Causes	5,422	898.1
Under 1 year	1. Certain Diseases of Early Infancy (Birth Injury - 8) (Asphyxia of Newborn - 12) (Immaturity Unqualified - 27) (Other - 109)	156	1,252.2
	2. Sudden Infant Death	63	505.7
	3. Congenital Anomalies	37	297.0
	4. Diseases of the Heart	10	80.3
	5. Enteritis and Other Diarrheal Diseases	9	72.2
	All Causes	331	2,656.9
1-4 Years	1. Accidents	19	40.1
	2-4. See Below	4	8.4
	5. Malignant Neoplasms	3	6.3
	All Causes	42	88.7
	(Congenital Anomalies, Homicide, and Injuries Undetermined Whether Accidentally or Purposely Inflicted are tied for 2nd rank.)		
5-14 Years	1. Accidents	28	20.9
	2. Malignant Neoplasms	8	6.0
	3. Homicide	5	3.7
	4. Influenza and Pneumonia	4	3.0
	5. Cerebral Spastic Infantile Paralysis	3	2.2
	All Causes	62	46.3
15-24 Years	1. Homicide	135	102.3
	2. Accidents	49	37.1
	3. Suicide	25	19.0
	4. Diseases of the Heart	9	6.8
	5. Malignant Neoplasms	8	6.1
	All Causes	258	195.6
25-34 Years	1. Homicide	156	221.2
	2. Accidents	60	85.1
	3. Diseases of the Heart	27	38.3
	4. Suicide	23	32.6
	5. Mental Disorders	15	21.3
	All Causes	364	516.2

TABLE 27
Leading Causes of Death and Cause-Specific Rates By Age, Sex, and Race, Michigan, 1978 (Cont.)

All Other Males[2]

Age	Rank and Cause of Death	Number	Specific Rate
35-49 Years			
	1. Diseases of the Heart	141	157.3
	2. Homicide	102	113.8
	3. Malignant Neoplasms	91	101.5
	4. Cirrhosis of the Liver	74	82.6
	5. Accidents	72	80.3
	All Causes	673	750.9
50-64 Years			
	1. Diseases of the Heart	517	674.4
	2. Malignant Neoplasms	431	562.2
	3. Cerebrovascular Disease	106	138.3
	4. Cirrhosis of the Liver	82	107.0
	5. Accidents	64	83.5
	All Causes	1,514	1,974.9
65 and Over			
	1. Diseases of the Heart	878	2,129.7
	2. Malignant Neoplasms	555	1,346.2
	3. Cerebrovascular Disease	178	431.8
	4. Influenza and Pneumonia	54	131.0
	5. Accidents	47	114.0
	All Causes	2,177	5,280.5

TABLE 2.7
Leading Causes of Death and Cause-Specific Rates By Age, Sex, and Race, Michigan, 1978

All Other Females[2]

Age	Rank and Cause of Death	Number	Specific Rate
All Ages	1. Diseases of the Heart	1,376	214.9
	2. Malignant Neoplasms	721	112.6
	3. Cerebrovascular Disease	417	65.1
	4. Accidents	159	24.8
	5. Diabetes Mellitus	153	23.9
	All Causes	4,055	633.3
Under 1 Year	1. Certain Diseases of Early Infancy (Birth Injury - 10) (Asphyxia of Newborn - 16) (Immaturity Unqualified - 26) (Other - 101)	153	1,222.6
	2. Sudden Infant Death	34	271.7
	3. Congenital Anomalies	25	199.8
	4. Septicemia	8	63.9
	5. Accidents	6	47.9
	All Causes	247	1,973.7
1-4 Years	1. Accidents	22	47.1
	2-4. See Below	3	6.4
	5-6. See Below	2	4.3
	All Causes	39	83.5
	(Congenital Anomalies, Diseases of the Heart, and Malignant Neoplasms are tied for 2nd rank.) (Homicide and Influenza and Pneumonia are tied for 5th rank.)		
5-14 Years	1. Accidents	16	12.1
	2. Malignant Neoplasms	5	3.8
	3. Homicide	3	2.3
	4-5. See Below	2	1.5
	All Causes	39	29.4
	(Congenital Anomalies and Diseases of the Heart are tied for 4th rank.)		
15-24 Years	1. Homicide	41	29.9
	2. Accidents	26	19.0
	3. Suicide	11	8.0
	4-5. Diseases of the Heart	8	5.8
	Malignant Neoplasms	8	5.8
	All Causes	141	102.8
25-34 Years	1. Homicide	37	40.6
	2. Malignant Neoplasms	14	15.4
	3. Diseases of the Heart	13	14.3
	4. Accidents	11	12.1
	5. Cerebrovascular Disease	9	9.9
	All Causes	162	178.0

TABLE 2.7
Leading Causes of Death and Cause-Specific Rates By Age, Sex, and Race, Michigan, 1978 (Cont.)

All Other Females[2]

Age	Rank and Cause of Death	Number	Specific Rate
35-49 Years	1. Malignant Neoplasms	112	124.2
	2. Diseases of the Heart	71	78.7
	3. Cirrhosis of the Liver	38	42.1
	4. Accidents	28	31.1
	5. Cerebrovascular Disease	25	27.7
	All Causes	404	448.0
50-64 Years			
	1. Diseases of the Heart	318	389.8
	2. Malignant Neoplasms	275	337.1
	3. Cerebrovascular Disease	98	120.1
	4. Cirrhosis of the Liver	57	69.9
	5. Diabetes Mellitus	37	45.4
	All Causes	995	1,219.7
65 and Over	1. Diseases of the Heart	958	1,980.7
	2. Malignant Neoplasms	304	628.5
	3. Cerebrovascular Disease	280	578.9
	4. Diabetes Mellitus	95	196.4
	5. Influenza and Pneumonia	46	95.1
	All Causes	2,028	4,193.0

The Probability of Eventual Death Due to a Specified Cause

While cause-specific death rates are useful in gauging the frequency of death due to certain causes and in making comparisons between areas or populations, they do not relate the risk that the condition imposes on the population with clarity. Mortality data can be used to develop this risk in probabilistic terms. Through the application of life expectancy techniques, a probability of death due to a given cause can be estimated. Such probabilities represent the average risk of eventual death being caused by a specified condition under an assumption that the mortality across all ages that was observed in a time period will remain unchanged through the remaining life of the population. These probabilities can be estimated for any given age attained. The following list relates the probability at birth of dying from the ten leading causes of death based upon Michigan mortality experience for the years 1976 through 1978.

DISEASE CATEGORY	PROBABILITY AT BIRTH OF EVENTUAL DEATH DUE TO CONDITION FOR:	
	Males	Females
Heart Disease	.415	.432
Malignant Neoplasms	.198	.174
Cerebrovascular Disease	.082	.133
Accidents	.047	.028
Influenza and Pneumonia	.028	.030
Diabetes Mellitus	.017	.029
Cirrhosis of the Liver	.019	.010
Arteriosclerosis	.016	.028
Suicide	.016	.006
Homicide	.013	.004
All Other Causes	.149	.126
	1.000	1.000

The 1976 through 1978 data would indicate that 85.1 percent of all males and 87.4 percent of all females in Michigan will die from one of the ten leading causes if all things remain constant. Approximately four of every ten people will die from heart disease. Women face higher risks of death from heart disease, cerebrovascular disease, influenza and pneumonia, diabetes mellitus and arteriosclerosis than do males. At the same time, males are more likely to die from cancer, accidents, cirrhosis of the liver, suicide, and homicide according to the mortality experience in Michigan during 1976 through 1978.

Related to the probability at birth of eventual death due to a given cause is the hypothetical gain in life expectancy that would result if a given cause of death were eliminated. Based on 1976-1978 mortality data, the average number of years of life gained by eliminating deaths due to a major cause is given in the list that follows. Deaths in infancy from all causes are added for comparative purposes.

DISEASE CATEGORYELIMINATED	GAIN IN LIFE EXPECTANCY FOR:	
	Males	Females
Heart Disease	5.1	3.7
Malignant Neoplasms	2.7	2.9
Cerebrovascular Disease	0.7	1.0
Accidents	1.5	0.7
Influenza and Pneumonia	0.3	0.2
Diabetes Mellitus	0.2	0.3
Cirrhosis of the Liver	0.4	0.2
Arteriosclerosis	0.1	0.1
Suicide	0.5	0.2
Homicide	0.5	0.2
All Causes of Infant Mortality	1.1	1.0

The largest gains in life expectancy would result from the elimination of heart disease and cancer, the two leading causes of death. Considering the number of deaths involved, relatively large gains in life expectancy would result from the elimination of infant mortality, accidents and suicide. Eliminating deaths in the younger age groups, where these causes are concentrated, has a greater impact on the potential number of years of life to be gained than eliminating deaths in the older age groups.

Diseases of the Heart

In 1978 29,406 Michigan residents died from diseases of the heart. Heart disease continues to be the single most frequent cause of death in Michigan and the United States. Heart disease accounted for more Michigan resident deaths than the next five most frequent causes combined, namely: cancer, stroke, accidents, influenza and pneumonia and diabetes mellitus.

Of the 29,406 deaths due to diseases of the heart in 1978, 16,160 were to males and 13,246 to females. The median age at death for males was 71 years compared to 79 years for females. The median age at death for all persons was 75 years (Table 2.8).

The median age of 72 years for white males exceeded that for other than white males by 6 years. The median age at death for white females was 80 years, 7 years above that for other than white females.

Table 2.9 presents death rates for diseases of the heart by age, race and sex. Note that the death rate associated with this cause rises markedly with advancing age. Heart disease was the underlying cause of 49 deaths below 5 years of age or about 2.2 percent of all deaths in this age group. In contrast, 52.0 percent of all deaths in the age group 85 and over were attributed to this cause in 1978. The heart disease death rate was 7,173.4 in the 85 and over age group.

Examination of Table 2.9 reveals that the heart disease death rate for males was substantially higher than that for females in 1978 (357.4 compared to 283.8 per 100,000 population). The relationship between rates for males and females is graphically displayed in Figure 2.6. Age-specific heart disease death rates

TABLE 2.8 - Deaths Due to Diseases of the Heart by Age, Race, and Sex, Michigan Residents, 1978

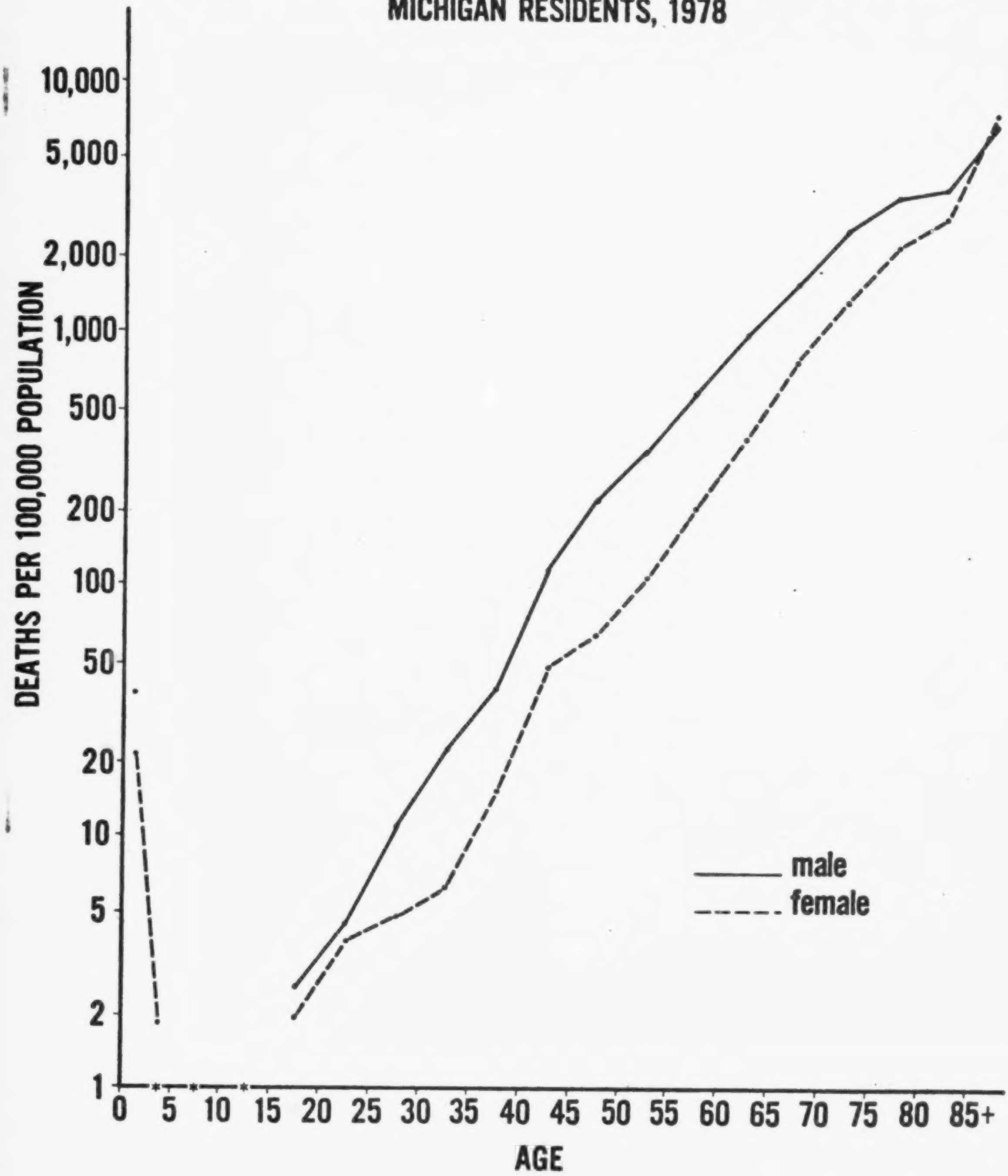
AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	40	26	14	27	16	11	13	10	3	-	-	-
1-4 Years........	9	4	5	6	4	2	3	-	3	-	-	-
5-9 Years........	1	-	1	1	-	1	-	-	-	-	-	-
10-14 Years......	8	4	4	5	3	2	3	1	2	-	-	-
15-19 Years......	21	12	9	16	10	6	5	2	3	-	-	-
20-24 Years......	32	17	15	20	10	10	12	7	5	-	-	-
25-29 Years......	42	26	16	28	19	9	14	7	7	-	-	-
30-34 Years......	97	76	21	71	56	15	26	20	6	-	-	-
35-39 Years......	156	117	39	122	93	29	34	24	10	-	-	-
40-44 Years......	320	238	82	255	197	58	63	40	23	2	1	1
45-49 Years......	621	486	135	503	406	97	115	77	38	3	3	-
50-54 Years......	1,164	879	285	943	731	212	218	147	71	3	1	2
55-59 Years......	1,860	1,351	509	1,569	1,172	397	282	173	109	9	6	3
60-64 Years......	2,682	1,892	790	2,341	1,690	651	335	197	138	6	5	1
65-69 Years......	3,370	2,187	1,183	2,978	1,963	1,015	382	218	164	10	6	4
70-74 Years......	3,877	2,304	1,573	3,497	2,109	1,388	376	191	185	4	4	-
75-79 Years......	4,329	2,315	2,014	3,920	2,105	1,815	401	206	195	8	4	4
80-84 Years......	4,457	2,032	2,425	4,143	1,897	2,246	310	132	178	4	3	1
85-89 Years......	3,700	1,371	2,329	3,490	1,293	2,197	207	78	129	3	-	3
90 and Over......	2,620	823	1,797	2,457	770	1,687	160	53	107	3	-	3
All Ages	29,406	16,160	13,246	26,392	14,544	11,848	2,959	1,583	1,376	55	33	22
Median Age at Last Birthday	75	71	79	76	72	80	69	66	73	68	65	*

TABLE 2.9 - Heart Disease Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	320.0	357.4	283.8	332.8	371.9	294.7	238.4	262.9	215.4
Under 1 Year........	29.6	37.7	21.2	24.6	28.3	20.6	52.1	80.3	*
1-4 Years..........	1.6	*	1.8	1.3	*	*	*	*	*
5-9 Years..........	*	*	*	*	*	*	*	*	*
10-14 Years........	0.9	*	*	0.6	*	*	*	*	*
15-19 Years........	2.2	2.5	1.9	2.0	2.5	1.5	3.4	*	*
20-24 Years........	4.1	4.5	3.8	3.1	3.2	3.0	9.9	11.8	8.1
25-29 Years........	7.3	10.7	4.8	5.6	8.9	3.1	18.4	22.3	15.6
30-34 Years........	14.1	22.0	6.2	11.8	18.3	5.1	30.4	51.1	13.0
35-39 Years........	27.5	38.1	15.0	24.8	34.4	13.0	45.5	65.6	26.2
40-44 Years........	80.3	112.6	43.8	74.0	106.4	36.6	123.4	157.6	89.5
45-49 Years........	138.8	210.5	62.4	128.4	200.8	51.0	214.8	282.1	144.2
50-54 Years........	220.4	337.6	106.4	202.5	317.7	90.4	357.5	491.2	228.6
55-59 Years........	382.4	578.6	201.3	363.9	566.5	177.1	532.7	676.4	398.8
60-64 Years........	674.3	992.7	381.3	663.1	998.9	353.9	764.5	942.4	601.6
65-69 Years........	1,141.4	1,586.8	751.4	1,151.2	1,634.3	732.7	1,069.8	1,256.8	893.1
70-74 Years........	1,838.6	2,508.2	1,321.8	1,855.7	2,597.7	1,293.4	1,693.2	1,816.3	1,582.6
75-79 Years........	2,594.6	3,464.0	2,013.7	2,554.2	3,444.8	1,964.9	3,068.6	3,673.3	2,616.0
80-84 Years........	3,181.9	3,660.7	2,867.6	3,201.3	3,721.2	2,863.2	2,943.8	2,970.9	2,923.9
85 and Over........	7,173.4	6,785.4	7,398.3	7,431.9	7,100.8	7,620.3	4,590.9	3,992.4	5,005.6
Age-Adjusted Rate [1]	209.2	281.8	146.1	206.1	282.5	140.3	231.0	274.5	190.8

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

Fig. 2.6 AGE-SPECIFIC HEART DISEASE DEATH RATES[1] BY SEX, MICHIGAN RESIDENTS, 1978



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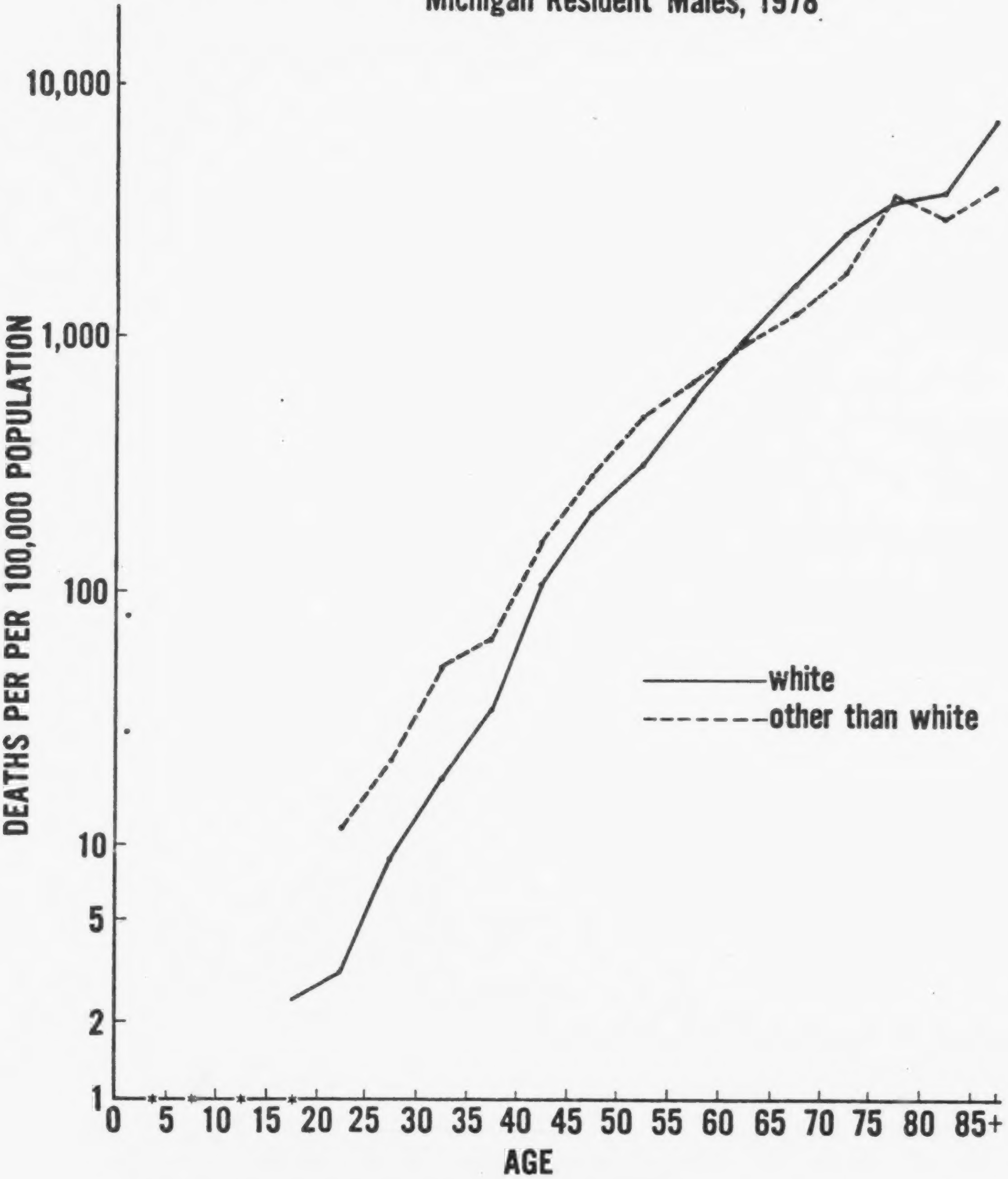
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

for males and females are similar below the age of 25. Rates for males were substantially above those of females between ages 25 and 84. The greatest differentials occurred between the ages of 30 and 64 with rates for males ranging between 2.5 and 3.5 times the corresponding rates for females. The gap between rates for males and females becomes progressively smaller between ages 65 and 84 and beyond age 85 the heart disease death rate for females exceeds that for males.

A comparison of 1978 heart disease death rates for males by race is graphically presented in Figure 2.7. Rates for other than white males were higher than those for white males between ages 20 and 59 and lower than rates for white males in all age intervals beyond age 59 except the 75-79 age group. The rate for white males across all ages was 371.9 compared to 262.9 for other than white males. This differential stems largely from the fact that a greater proportion of the white male population was in the older age groups where heart disease death rates were particularly high. The age-adjusted heart disease death rate for white males was 282.5 in 1978, 2.9 percent above the rate of 274.5 for other than white males.

Heart disease death rates for white and other than white females are displayed in Figure 2.8. Rates for other than white females were at least twice those for white females between ages 25 and 59. Rates for other than white females remained higher than those for white females between ages 60 and 84, beyond which age the rate for white females exceeded that for other than white females. Although the rate for white females for all ages (294.7) was substantially above the comparable rate for other than white females (215.4), this relationship is reversed when the differing age distributions of the two populations are considered. The age-adjusted rate for other than white females was 190.8 while that for white females was 140.3.

Figure 2.7 Age-Specific Heart Disease Death Rates[1] by Race, Michigan Resident Males, 1978



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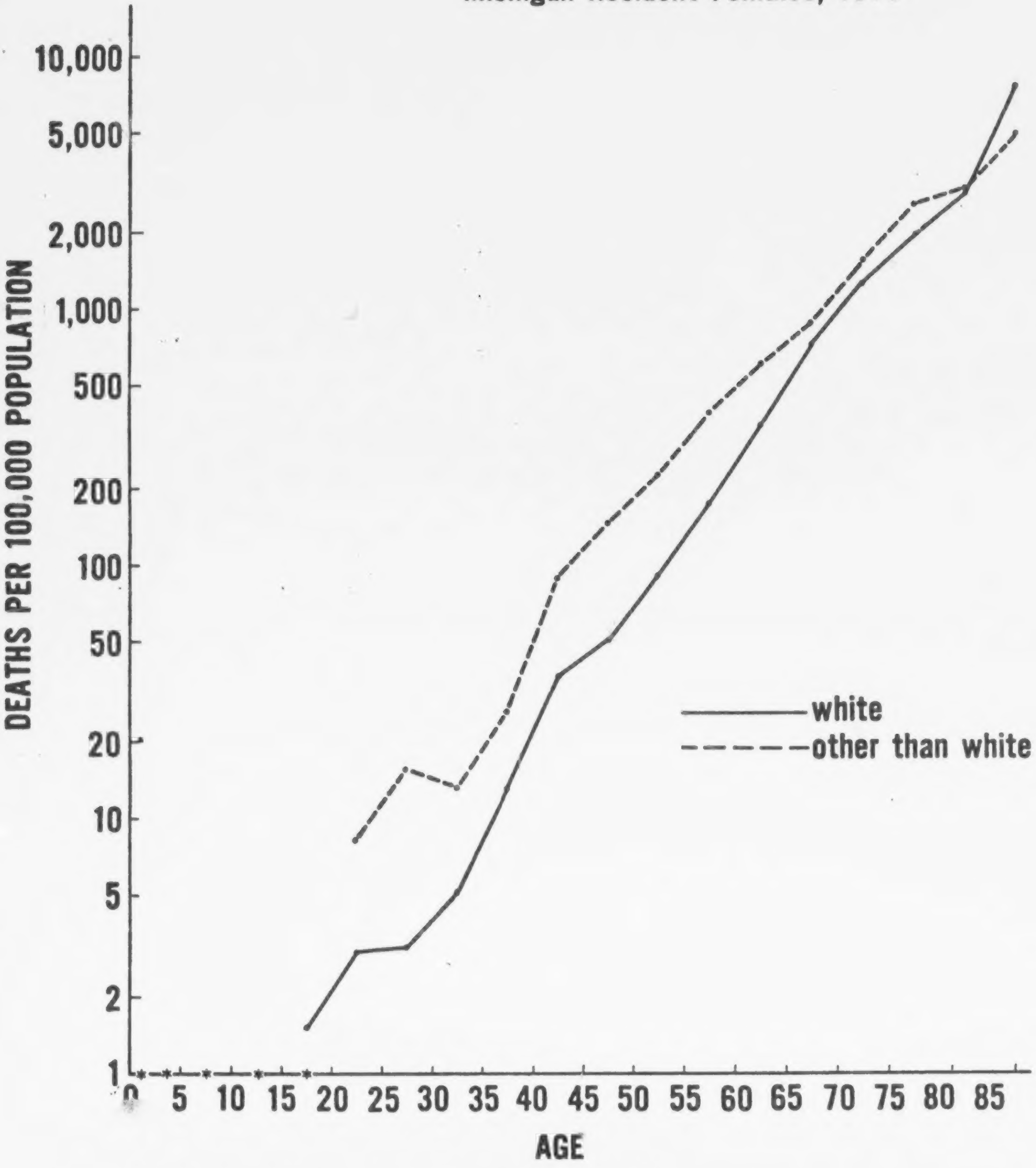
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.8 Age-Specific Heart Disease Death Rates[1] by Race, Michigan Resident Females, 1978



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[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

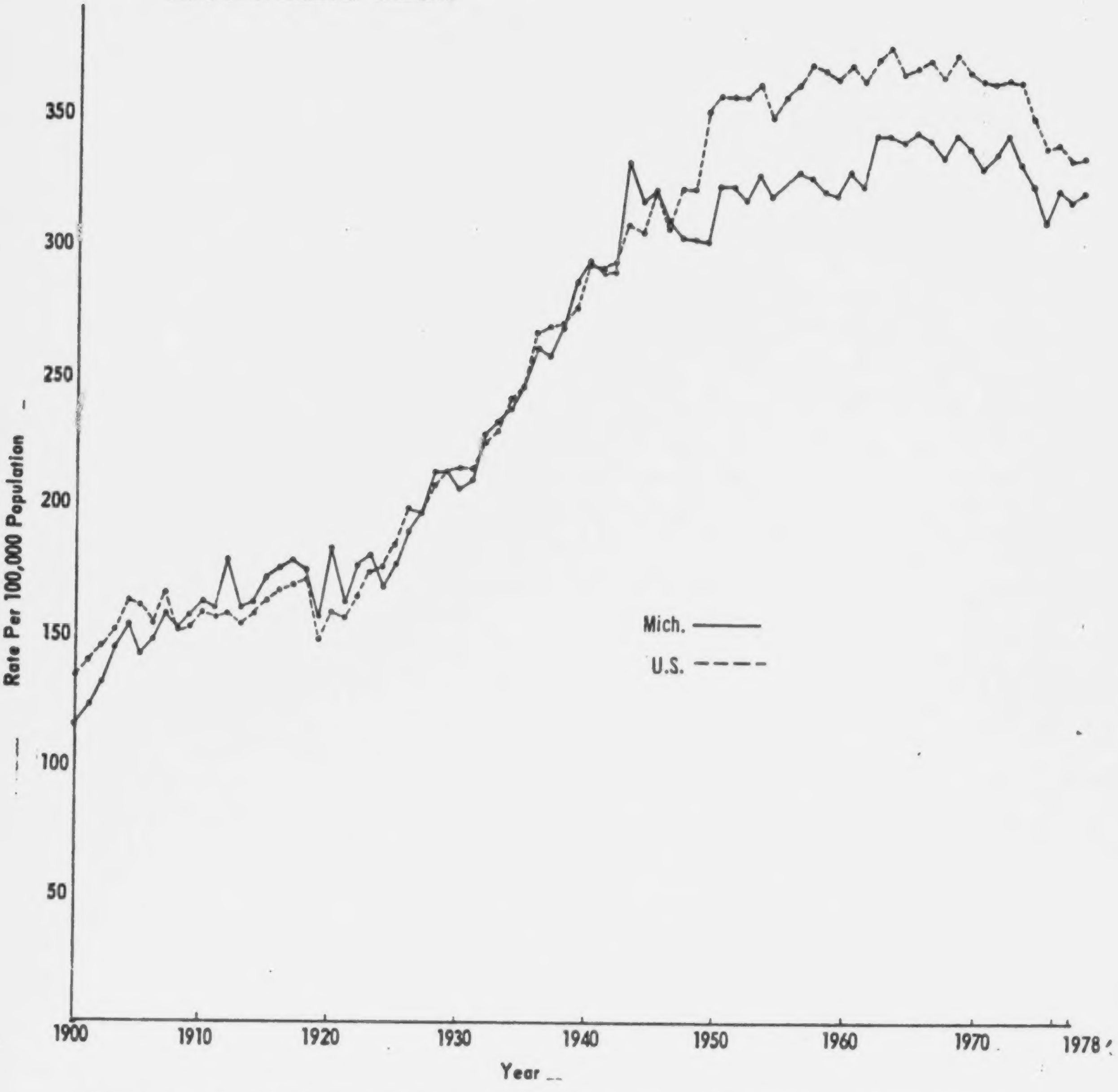
In 1900 the crude heart disease death rate in Michigan was 117.1, the lowest rate of this century. In 1978 the rate was 320.0. The highest observed rate was 343.1 in 1965. Heart disease death rates rose through the time period 1900-1950 and have remained relatively stable over the last twenty-eight years. The annual rate declined in four of the past six years. The rate for 1978 was 1.1 percent above that for 1977, but 6.7 percent below the peak rate observed in 1965. The rate for Michigan was consistently close to the national rate until 1946. Since that time the rate for Michigan has been well below that of the nation. In 1978, the rate for the nation was an estimated 333.9, 4.3 percent above the rate of death due to heart disease for Michgian (Figure 2.9).

Age-adjusted rates for diseases of the heart in 1970's are presented in Table 2.10. These data indicate a downward trend in heart disease death rates for the population as a whole and for each race-sex subgroup individually. Age-adjusted rates have declined by about 20 percent both for Michigan and the nation between 1970 and 1978.

Age-adjusted rates for other than white females have been well above those for white females through the 1970's in both Michigan and the United States. Age-adjusted rates for other than white males have tended to be slightly below those for white males in Michigan and slightly above those for white males nationally.

The most prevalent type of heart disease death is acute myocardial infarction (13,347 deaths in 1978) commonly referred to as a "coronary" (Table 2.11). Almost as frequent is chronic ischemic heart disease. In 1978, there were 12,838 deaths attributed to this cause. Together, acute myocardial in-

FIGURE 2.9—Heart Disease Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1]National rates are from death registration states for 1900-1932 and the United States for 1933-1978; United States 1978 rate is provisional.

[2]Heart Disease death rates since 1900 are suitable for general comparison over time but detailed study (such as time series) requires special consideration. See Technical Notes.

Table 2.10

Age-Adjusted Heart Disease Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Femal
Michigan	1970	258.0	350,6	178.4	254.4	350.7	172.1	281.0	337.3	230.3
	1971	258.3	356.8	174.2	254.3	356.9	167.2	283.4	340.5	231.4
	1972	259.5	352.7	179.7	255.7	351.7	173.9	284.5	351.7	223.3
	1973	246.3	335.3	170.1	242.3	334.4	164.1	271.5	333.9	214.8
	1974	232.2	314.3	161.6	229.4	315.4	155.9	249.7	299.0	204.8
	1975	218.8	297.8	149.9	217.7	300.4	146.0	223.0	270.8	178.7
	1976	216.8	295.3	148.6	215.1	297.0	144.4	227.8	277.6	181.5
	1977	211.7	288.4	145.1	209.0	289.7	139.4	229.0	273.9	187.3
	1978	209.2	281.8	146.1	206.1	282.5	140.3	231.0	274.5	190.8
U.S.	1970	253.6	348.5	175.2	249.1	347.6	167.8	288.9	350.8	236.6
	1971	252.0	344.6	175.1	247.4	343.0	168.2	297.3	363.3	242.3
	1972	249.3	344.5	171.6	244.9	343.3	164.7	283.1	349.3	228.5
	1973	244.4	339.3	167.4	239.9	338.1	160.3	279.8	344.7	225.8
	1974	232.7	323.6	159.2	228.8	322.8	152.9	262.8	325.8	210.8
	1975	220.5	308.3	149.7	217.2	308.0	144.2	245.2	307.0	194.6
	1976	216.7	303.3	147.1	213.5	303.0	141.7	241.1	302.8	190.3
	1977	210.4	294.7	142.9	206.8	294.0	137.2	237.9	297.8	188.7
	1978	207.3 Pr	---	---	---	---	---	---	---	---

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

TABLE 2.11- Deaths Due to Diseases of the Heart by Detailed Cause, Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENT
410	Acute Myocardial Infarction	13,347	45.4
412	Chronic Ischemic Heart Disease	12,838	43.7
427	Symptomatic Heart Disease	1,755	6.0
402	Hypertensive Heart Disease	272	0.9
425	Cardiomyopathy	230	0.8
395	Diseases of Aortic Valve	170	0.6
394	Diseases of Mitral Valve	133	0.5
398	Other Heart Disease, Specified as Rheumatic	117	0.4
404	Hypertensive Heart and Renal Disease	98	0.3
411	Other Acute and Subacute Ischemic Heart Disease	75	0.3
429	Ill-Defined Heart Disease	72	0.2
426	Pulmonary Heart Disease	60	0.2
428	Other Myocardial Insufficiency	59	0.2
424	Chronic Disease of Endocardium	48	0.2
396	Diseases of Mitral and Aortic Valves	33	0.1
421	Acute and Subacute Endocarditis	26	0.1
397	Diseases of Other Endocardinal Structure	19	0.1
423	Chronic Disease of Pericardium, Nonrheumatic	15	0.1
422	Acute Myocarditis	12	0.0
391	Rheumatic Fever With Heart Involvement	12	0.0
413	Angina Pectoris	10	0.0
420	Acute Pericarditis, Nonrheumatic	3	0.0
393	Diseases of Pericardium	1	0.0
390	Rheumatic Fever No Heart Involvement	1	0.0
	TOTAL	29,406	100.1

farction and chronic ischemic heart disease are the underlying causes in 89 percent of all Michigan heart disease deaths. The remaining 11 percent of the deaths, if considered separately, would comprise the 5th leading cause of death. These deaths are distributed among 22 other categories of heart disease. Nearly 63 percent of the remaining 3,221 deaths can be attributed to two causes: symptomatic heart disease and hypertensive heart disease (1,755 and 272 deaths, respectively).

The trend in heart disease mortality by the major diseases of the heart is presented in Table 2.12. The number of deaths due to acute myocardial infarction declined moderately during the period 1968-1978 while the number resulting from hypertensive heart disease declined more sharply. In contrast, the number of deaths due to chronic ischemic heart disease increased moderately while the number caused by symptomatic heart disease increased substantially. In the same period, the number of deaths from all other forms of heart disease combined declined notably.

The probability of eventually dying from heart disease, based on death data from 1976, 1977 and 1978, is 0.415 for males and 0.432 for females at birth. Males displayed a slightly greater propensity to die from other causes. The chance associated with dying from heart disease increases steadily with advancing age as certain competing causes of death become less likely. By age 85, the observed probability was 0.484 for males and 0.519 for females in 1976-1978. Although males are generally less likely to eventually die from heart disease the probabilities demonstrated by each sex are quite similar between ages 30 and 49. The higher probability for females across most age intervals reflects smaller chances of death due to some cause other than heart disease (Figure 2.10).

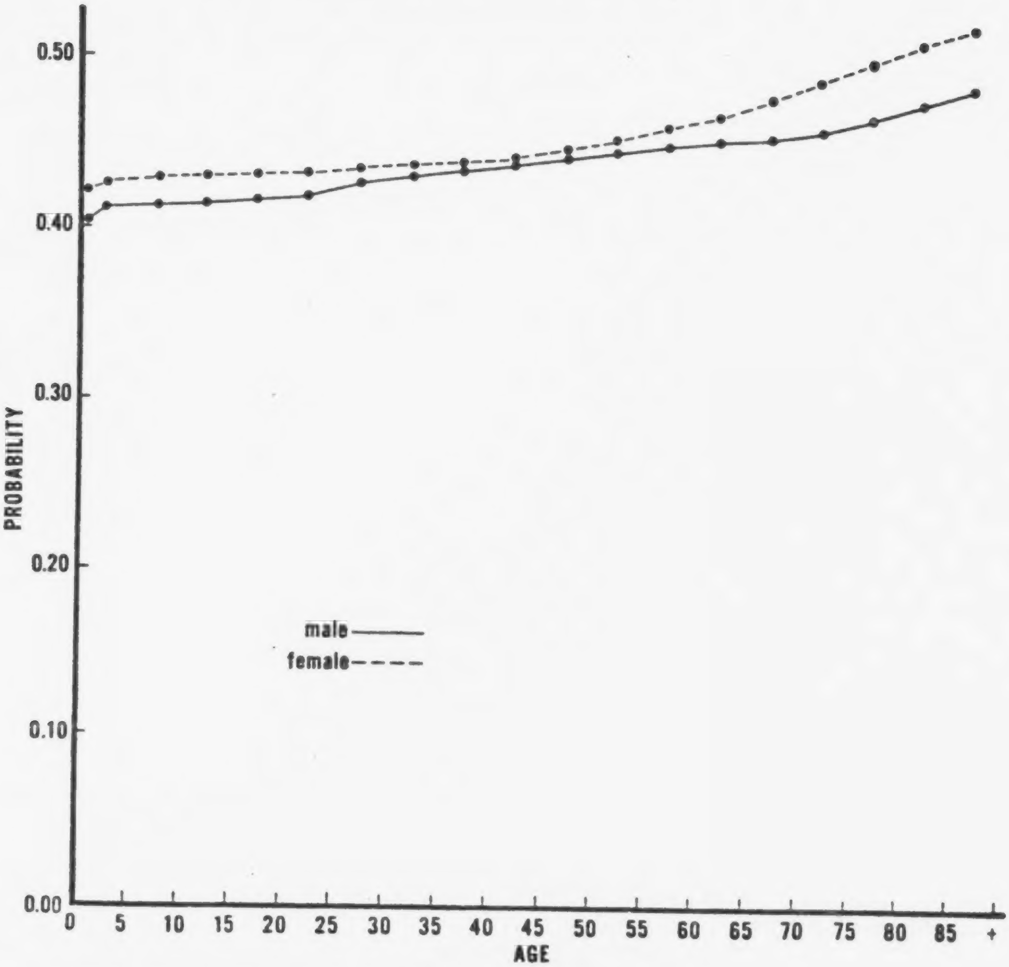
TABLE 2.12 - Deaths Due to Selected Diseases of the Heart

Michigan Residents, 1968 - 1978

Year	Total[1]	Acute Myocardial Infarction	Chronic Ischemic	Symptomatic	Hypertensive Heart Disease	Cardiomyo-Pathy	Diseases of Aortic Valve	Diseases of Mitral Valve	Other Specified as Rheumatic	Hypertensive Heart and Renal Disease
1968	29,680	15,606	11,430	614	463	30	162	187	274	210
1969	29,396	15,678	11,102	741	468	53	157	177	231	200
1970	29,204	15,614	11,083	757	427	89	134	153	217	153
1971	30,095	15,654	11,857	822	422	84	164	162	225	162
1972	30,865	15,887	12,406	996	366	56	137	165	175	150
1973	29,944	14,724	12,633	966	330	111	157	136	184	140
1974	29,220	14,120	12,523	1,057	340	124	138	136	191	119
1975	28,298	13,714	11,954	1,175	315	149	129	137	139	96
1976	29,233	14,105	12,338	1,303	299	159	155	120	135	107
1977	28,895	13,425	12,499	1,444	321	189	157	135	112	91
1978	29,406	13,347	12,838	1,755	272	230	170	133	117	98

[1] Rows do not add to total as other heart disease categories are included only in the total.

FIGURE 2.10 Probability of Eventually Dying From Heart Disease
By Age and Sex, Michigan Residents, 1975-1978[1]



[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

An apparent inconsistency can be noted by review of Figure 2.6 and Figure 2.10. The heart disease mortality rate for males is higher than that for females over all ages, yet the chance of death due to heart disease is slightly greater for females over most ages. This paradox is explained by a comparison of these two measures. The cause-specific mortality rate measures the proportion of a population that had died from the particular cause over a certain period of time. The probability estimate takes into account the present age and cause-specific mortality rates and the life expectancy of the population. A greater proportion of all females now alive are expected to live into the older age intervals where they will be subject to the high heart disease mortality rates characteristic of those age groups. The effect of the longer female life span outweighs the effect of the higher male mortality rate from heart disease.

Cancer

Of 74,773 Michigan resident deaths in 1978, 15,249 were attributed to cancer. Although not the leading cause of death in Michigan or the United States, cancer affects all the human body's major systems and persons of all ages. The frequency of death due to cancer was about one-half that for heart disease across all ages, but the number of cancer deaths below age 60 was about the same as the number of deaths due to heart disease below age 60. The median age at death for cancer was 67, well below the median age of 75 for heart disease deaths (Table 2.13).

Of the 15,249 cancer deaths in 1978 occurring to Michigan residents, 8,476 were for males while 6,773 occurred to females. The median age at death was 68 for all males and for white males while 67 was the median age for all females as well as for white females. The median age at death for other than white persons who died of cancer was somewhat lower, 65 for males and 62 for females.

Cancer death rates by age, race and sex are presented in Table 2.14. The cancer death rate across all ages in 1978 was higher for males (187.4) than for females (145.1). Age-specific rates for males were higher than those for females in fourteen of the nineteen age groups. Mortality rates for males were 60 to 100 percent higher than those for females at ages 65 and over. Only in the age groups from 35 through 49 were rates for females appreciably higher than for males. In the first of these age groups (35-39), cancer mortality for females was 71 percent above the rate for males. The relative difference in rates for males and females ages 40-44 was 56 percent and for the 45-49 age group 23 percent. The age-adjusted cancer rate for males was 44 percent above that for females.

TABLE 2.13- Deaths Due to Cancer by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	6	1	5	5	-	5	1	1	-	-		
1-4 Years........	27	15	12	21	12	9	6	3	3	-	-	-
5-9 Years........	33	23	10	29	21	8	4	2	2	-	-	-
10-14 Years......	33	21	12	24	15	9	9	6	3	-	-	
15-19 Years......	53	32	21	47	29	18	6	3	3	-	-	-
20-24 Years......	71	39	32	61	34	27	10	5	5	-	-	
25-29 Years......	67	33	34	57	28	29	10	5	5	-		
30-34 Years......	115	52	63	100	46	54	15	6	9	-		
35-39 Years......	201	82	119	154	66	88	47	16	31	-	-	-
40-44 Years......	310	130	180	251	104	147	59	26	33	-	-	
45-49 Years......	636	296	340	537	246	291	97	49	48	2	1	1
50-54 Years......	1,145	610	535	959	495	464	183	112	71	3	3	-
55-59 Years......	1,599	880	719	1,352	729	623	247	151	96	-	-	-
60-64 Years......	2,116	1,211	905	1,835	1,042	793	276	168	108	5	1	4
65-69 Years......	2,201	1,298	903	1,964	1,149	815	235	149	86	2	-	2
70-74 Years......	2,192	1,347	845	1,938	1,163	775	251	183	68	3	1	2
75-79 Years......	1,891	1,082	809	1,711	977	734	179	104	75	1	1	-
80-84 Years......	1,452	785	667	1,338	715	623	114	70	44	-	-	-
85-89 Years......	781	397	384	722	363	359	59	34	25	-	-	-
90 and Over......	320	142	178	299	127	172	21	15	6	-	-	-
All Ages	15,249	8,476	6,773	13,404	7,361	6,043	1,829	1,108	721	16	7	9
Median Age at Last Birthday	67	68	67	68	68	67	64	65	62	63	*	64

TABLE 2.14 - Cancer Death Rates by Age, Race , and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	165.9	187.4	145.1	168.9	188.0	150.3	147.2	183.9	112.6
Under 1 Year.......	4.4	*	7.6	4.5	*	9.4	*	*	*
1-4 Years..........	4.9	5.3	4.4	4.5	5.1	4.0	6.4	*	*
5-9 Years..........	3.8	5.3	2.4	3.9	5.6	2.2	*	*	*
10-14 Years........	3.5	4.4	2.6	3.0	3.7	2.3	6.3	8.3	*
15-19 Years........	5.6	6.8	4.5	5.9	7.3	4.5	4.1	*	*
20-24 Years........	9.2	10.4	8.1	9.4	10.7	8.1	8.2	8.4	8.1
25-29 Years........	11.7	13.5	10.3	11.4	13.2	10.1	13.1	15.9	11.2
30-34 Years........	16.8	15.1	18.5	16.6	15.0	18.3	17.6	15.3	19.4
35-39 Years........	35.4	26.7	45.7	31.2	24.4	39.5	62.9	43.7	81.3
40-44 Years........	77.8	61.5	96.2	72.2	55.9	91.1	115.5	102.5	128.4
45-49 Years........	142.2	128.2	157.1	137.1	121.5	153.7	179.6	177.2	182.1
50-54 Years........	216.8	234.3	199.7	205.5	215.2	195.9	303.4	380.9	228.6
55-59 Years........	328.7	376.9	284.3	312.2	350.9	276.5	463.3	587.0	348.0
60-64 Years........	532.0	635.4	436.9	520.1	615.0	432.6	628.0	799.6	470.8
65-69 Years........	745.4	941.8	573.6	757.4	953.7	587.4	658.1	859.1	468.4
70-74 Years........	1,039.5	1,466.4	710.1	1,028.8	1,431.0	724.0	1,130.3	1,740.2	581.7
75-79 Years........	1,133.4	1,619.0	808.9	1,113.5	1,597.4	793.3	1,366.4	1,854.5	1,001.0
80-84 Years........	1,036.6	1,414.2	788.7	1,033.1	[illegible]	793.9	1,079.1	1,563.7	722.8
85 and Over........	1,249.7	1,667.0	1,007.7	1,274.9	1,686.6	1,040.5	998.0	1,493.4	654.7
Age-Adjusted Rate [1]	131.2	158.7	110.2	128.3	154.1	109.0	154.0	195.3	117.8

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

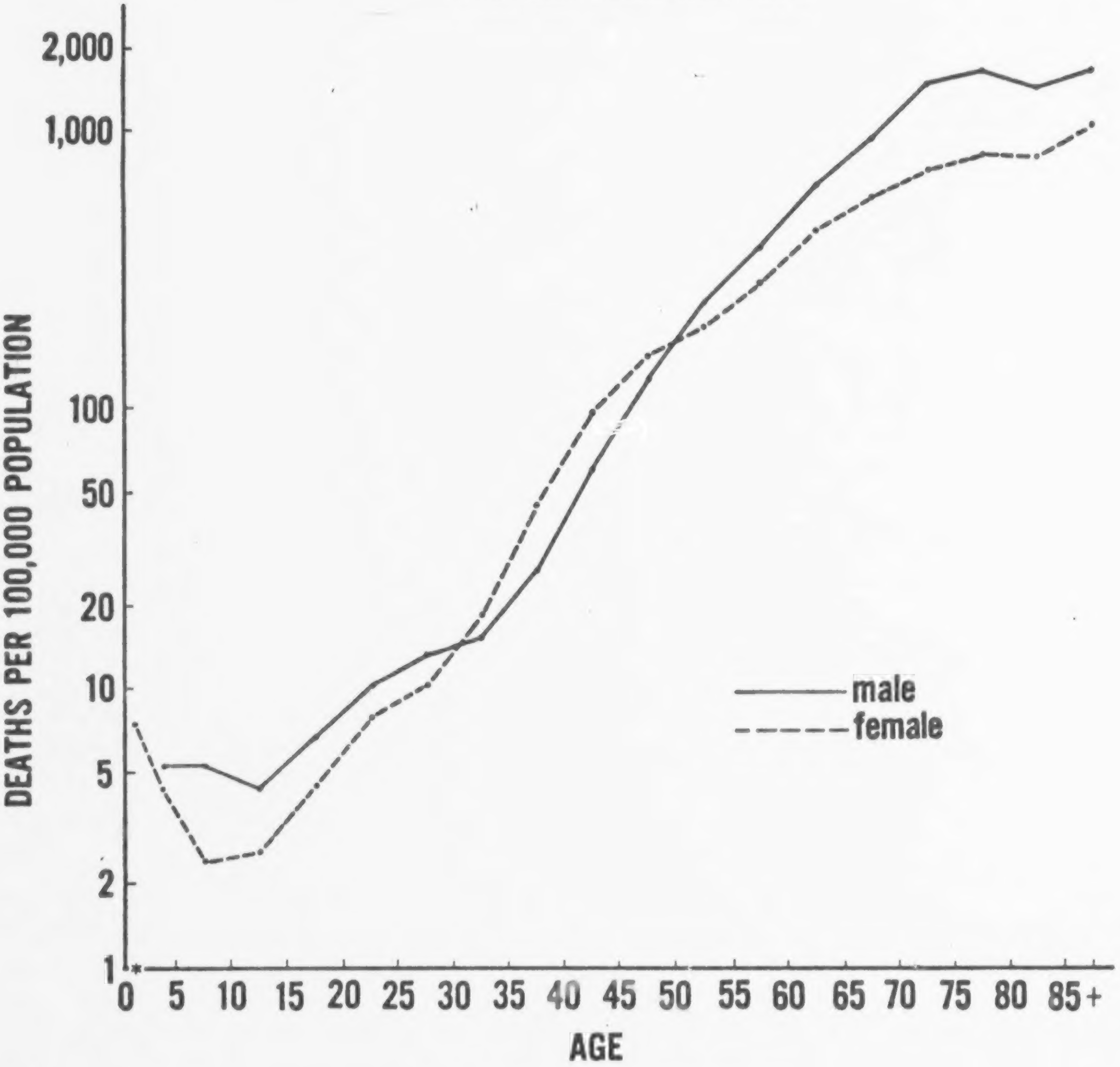
The cancer death rates displayed in Figure 2.11 show a strong increase in mortality due to cancer with advancing age. Males demonstrated higher rates from age 1 to age 30 than females. From 30 years of age to age 50 rates for females were above those of males. After 50 years of age rates for males were greater than those for females.

Cancer death rates for white and other than white males recorded in Table 2.14 are graphically displayed in Figure 2.12. Rates for white and other than white males were quite similar below age 35. Between ages 35 and 59 rates for other than white males were 1.5 to 1.8 times the rates for white males. Rates for other than white males were also above those for white males between ages 60-64 and 70-84, but below those for white males between ages 65-69 and at age 85 and above. Although the crude death rate for other than white males was slightly below the comparable rate for white males, the age-adjusted rate for other than white males was 27 percent higher than the age-adjusted rate for white males.

Cancer death rates were also similar for white and other than white females below age 35 (Figure 2.13). Rates for other than white females rose above the rates for white females between ages 35 and 64. In four of the five age groups beyond age 64, rates for white females were higher than those for females of other races. The crude rate for white females was one-third higher than the comparable rate for other than white females. The age-adjusted rate for other than white females, however, was 8 percent greater than that for white females.

Cancer death rates have risen steadily since 1900 (Figure 2.14). In 1978 the rate was 165.9, the highest observed in this century. The 1978 rate surpassed the previous high rate of 165.7 in 1977. The lowest observed rate for Michigan

Figure 2.11 Age-Specific Cancer Death Rates[1] by Sex, Michigan Residents, 1978



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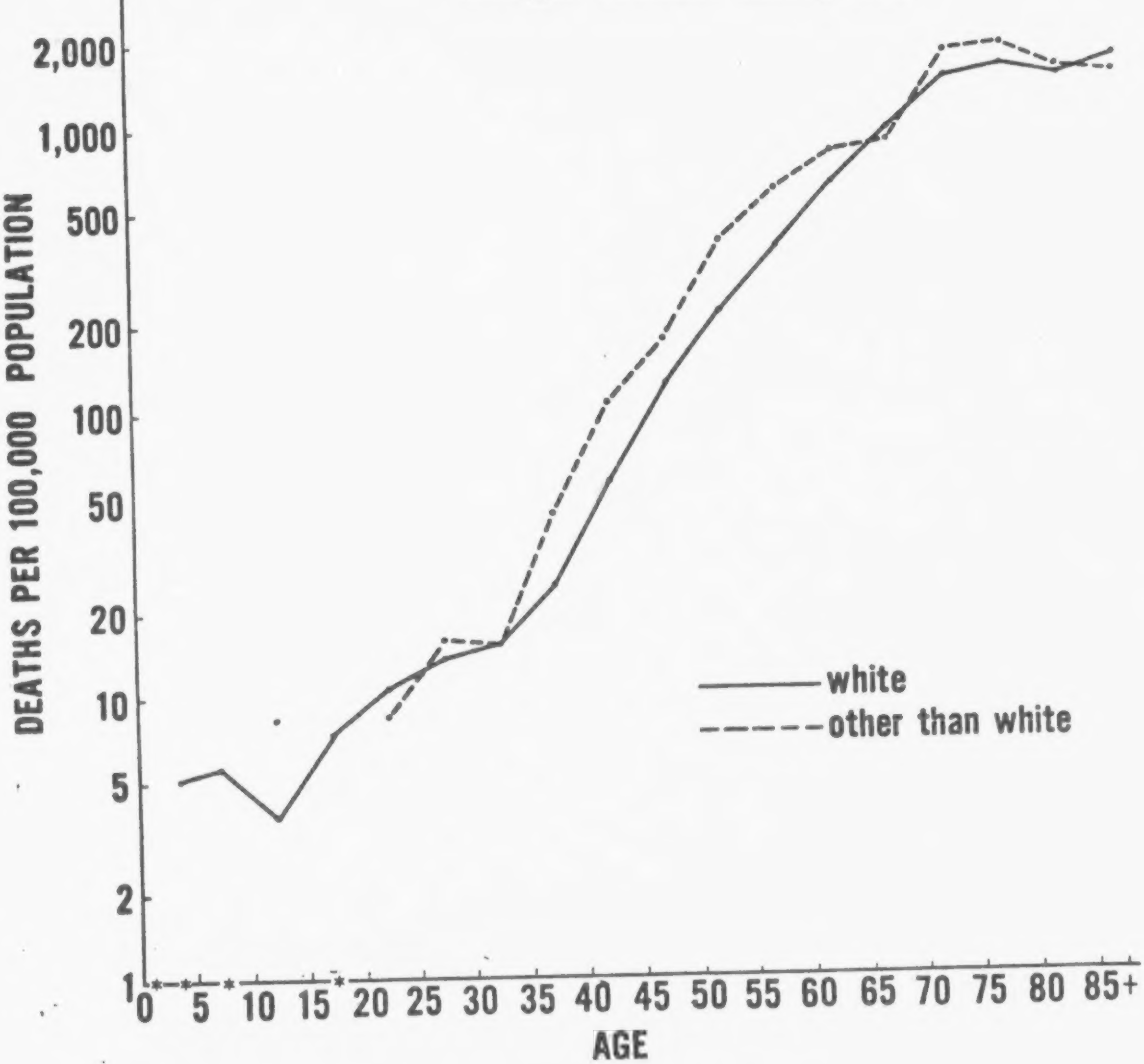
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.12 Age-Specific Cancer Death Rates[1] by Race, Michigan Resident Males, 1978



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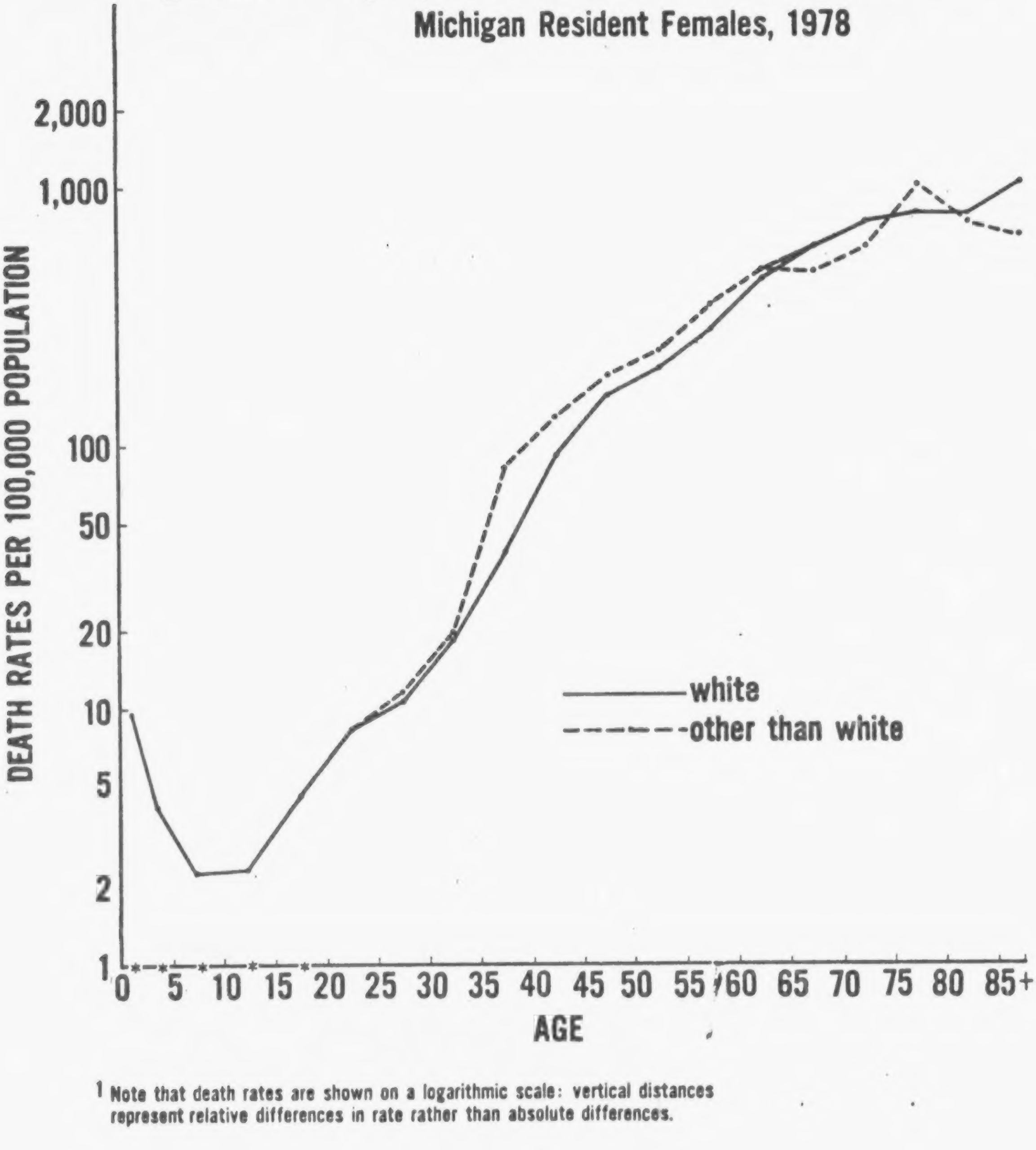
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.13 Age-Specifice Cancer Death Rates[1] by Race Michigan Resident Females, 1978



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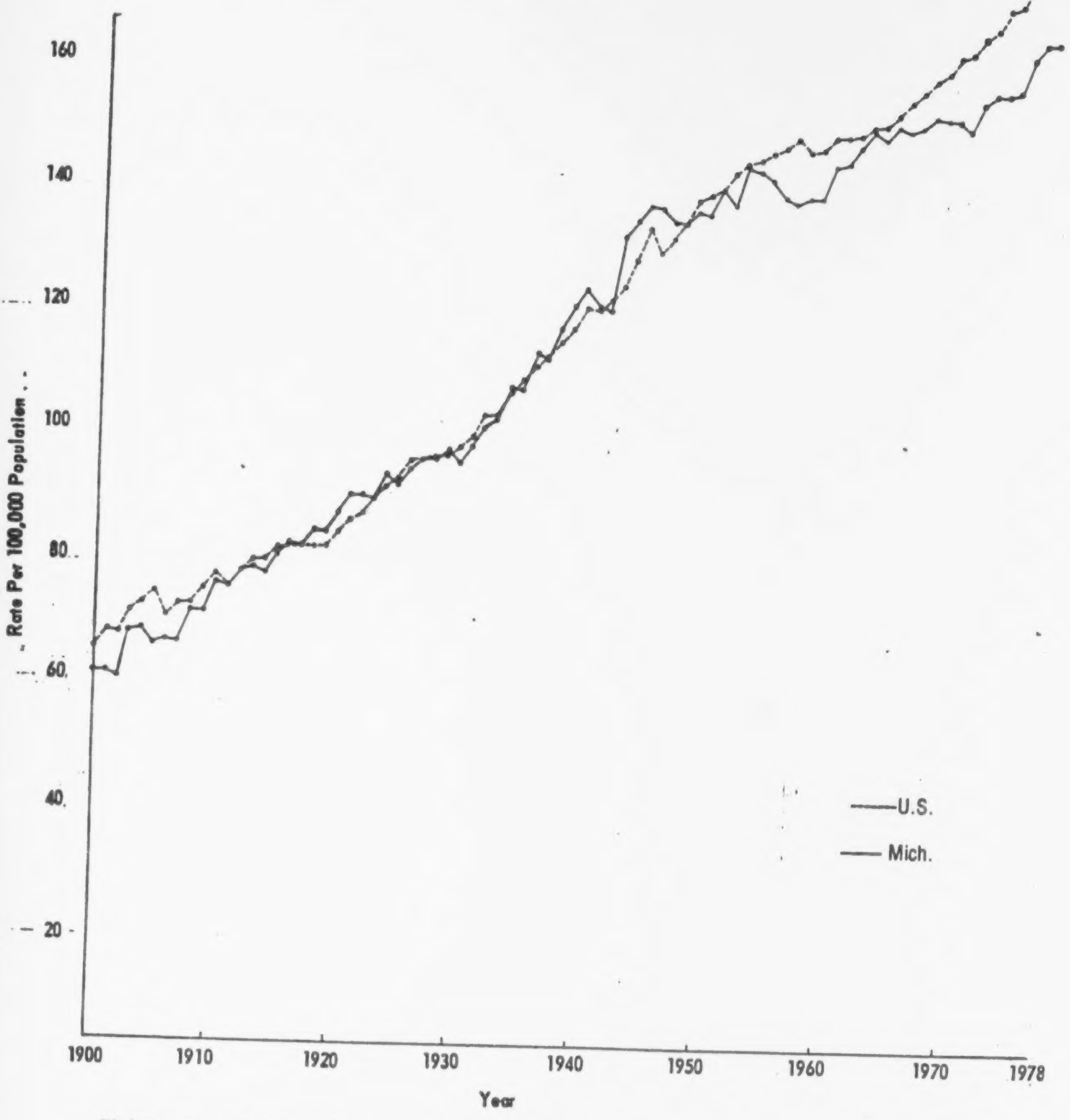
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

FIGURE 2.14—Cancer Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1] National rates are from Death Registration States for 1900-1932 and the United States for 1933-1978; United States rate for 1978 is provisional.

[2] Cancer death rates since 1900 are suitable for general comparison over time but detailed study (such as time series) requires special consideration. See Technical notes.

was 59.3 in 1902. Michigan's cancer death rate was below the national rate from 1900 through 1915. During the period 1916 through 1946 Michigan was generally at the national rate. Since 1947, the state rate has been consistently below the national cancer death rate. Over the last dozen or so years, the rate for the nation rose faster than the rate observed in Michigan. The national cancer death rate in 1978 was an estimated 181.6. This is 9.6 percent above the state rate.

Age-adjusted cancer death rates for the 1970's presented in Table 2.15 show a much closer relationship between Michigan and United States mortality patterns than that indicated by crude mortality rates. Michigan's 1970 age-adjusted rate for the total population was 3.2 percent higher than the comparable U.S. rate. Since 1970, Michigan's age-adjusted cancer death rate has tended to decline while the U.S. rate increased moderately. As a result, Michigan's age-adjusted cancer death rate has been below the comparable national rate since 1974. Michigan's 1978 age-adjusted cancer death rate of 131.2 was 1.5 percent below the provisional figure for the United States.

Table 2.15 also contains a comparison of age-adjusted cancer death rates for white males, white females, other than white males and other than white females. The rates for the other than white groups are consistently higher than those for their white counterparts. Rates for white males and other than white males have increased nationally while the rates in Michigan for these groups have exhibited a slight downward tendency. Age-adjusted rates for other than white females increased in the early part of the decade then decreased through 1978 while the rates for white females were essentially stable both in Michigan and the nation.

TABLE 2.15

Age-Adjusted Cancer Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	134.0	164.2	109.4	131.2	159.6	108.4	159.6	207.5	117.0
	1971	131.2	158.4	109.4	128.1	154.2	107.5	158.6	195.9	124.9
	1972	133.9	162.6	111.3	130.7	159.0	108.9	160.9	193.6	131.9
	1973	133.9	162.4	111.3	130.9	158.3	109.5	159.1	198.2	124.7
	1974	131.6	158.9	110.2	128.9	155.0	108.9	153.6	191.0	120.2
	1975	130.1	156.6	109.3	126.8	151.2	108.2	158.1	203.0	118.4
	1976	131.5	158.0	110.8	128.4	153.1	109.7	156.6	198.4	119.4
	1977	132.0	161.1	109.2	128.5	156.1	107.5	160.6	201.1	124.4
	1978	131.2	158.7	110.2	128.3	154.1	109.0	154.0	195.3	117.8
U.S.	1970	129.9	157.4	108.8	127.8	154.3	107.6	148.3	185.3	117.6
	1971	130.7	158.5	109.4	127.7	154.6	107.2	160.8	198.7	129.7
	1972	130.7	159.8	108.8	128.3	156.4	107.4	152.2	191.2	120.4
	1973	130.7	160.1	108.7	127.7	156.2	106.8	156.4	195.9	124.3
	1974	131.8	162.3	109.2	129.0	158.3	107.6	156.6	199.0	122.4
	1975	130.9	161.4	108.3	128.1	157.2	106.9	155.0	199.7	118.9
	1976	132.3	163.4	109.4	129.5	159.1	108.2	156.3	202.3	119.3
	1977	133.0	164.5	110.0	130.0	160.0	108.3	159.3	205.4	122.4
	1978	133.2Pr.	---	---	---	---	---	---	---	---

1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

Deaths from cancer for 58 different sites are presented in Table 2.16. The most common underlying type of cancer mortality is malignant neoplasm of the trachea, bronchus and lung (3,694 deaths). In 1978, 24.2 percent of all cancer deaths were attributed to this disease. The second most frequent type of cancer mortality is cancer of the large intestine (1,626 deaths). Breast cancer (1,370 deaths) is third while malignant neoplasms of the prostate and the pancreas are fourth and fifth respectively. These first five of the 58 diseases listed constituted 54.3 percent of all cancer deaths in Michigan. Of the remaining 53 diseases, 20 resulted in 100 or more deaths in 1978.

The increase in cancer mortality noted earlier is concentrated in certain specific types. Between 1968 and 1978 increasing numbers of deaths due to malignant neoplasms of the trachea, bronchus and lung were responsible for 63 percent of the increase in cancer mortality.

Changes in deaths due to other selected cancer sites over the 1968-1978 period are also presented in Table 2.17. Slight increases can be observed in deaths due to malignant neoplasms of the large intestine except rectum and deaths due to breast cancer, respectively the second and third most frequent types of cancer mortality. Malignant neoplasms of the prostate, the fourth most frequent type of cancer death, showed a somewhat larger increase in mortality of 27 percent.

TABLE 2.16 - Deaths Due to Malignant Neoplasms by Site Affected, Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE	NUMBER OF DEATHS	PERCENT
162	Malignant Neoplasm of Trachea, Bronchus, and Lung	3,694	24.2
153	Malignant Neoplasm of Large Intestine Except Rectum	1,626	10.7
174	Malignant Neoplasm of Breast	1,370	9.0
185	Malignant Neoplasm of Prostate	855	5.6
157	Malignant Neoplasm of Pancreas	736	4.8
199	Malignant Neoplasm Without Specification of Site	665	4.4
151	Malignant Neoplasm of Stomach	568	3.7
183	Malignant Neoplasm of Ovary, Fallopian Tube and Broad Ligament	408	2.7
188	Malignant Neoplasm of Bladder	400	2.6
154	Malignant Neoplasm of Rectum and Rectosigmoid Junction	338	2.2
150	Malignant Neoplasm of Esophagus	313	2.1
191	Malignant Neoplasm of Brain	308	2.0
205	Myeloid Leukemia	302	2.0
189	Malignant Neoplasm of Other and Unspecified Urinary Organs	282	1.8
202	Other Neoplasms of Lymphoid Tissue	288	1.9
197	Secondary Malignant Neoplasm of Respiratory and Digestive Systems	265	1.7
203	Multiple Myeloma	258	1.7
180	Malignant Neoplasm of Cervix Uteri	202	1.3
182	Other Malignant Neoplasm of Uterus	199	1.3
204	Lymphatic Leukemia	180	1.2
200	Lymphosarcoma and Reticulum - Cell Sarcoma	174	1.1
156	Malignant Neoplasm of Gallbladder and Bile Ducts	161	1.1
207	Other and Unspecified Leukemia	153	1.0
161	Malignant Neoplasm of Larynx	142	0.9
172	Malignant Neoplasm of Skin	121	0.8
195	Malignant Neoplasm of Ill-Defined Sites	96	0.6
201	Hodgkin's Disease	94	0.6
155	Malignant Neoplasm of Liver and Intrahepatic Bile Ducts, Specified as Primary	86	0.6
198	Other Secondary Malignant Neoplasms	86	0.6
192	Malignant Neoplasm of Other Parts of Nervous System	73	0.5
141	Malignant Neoplasm of Tongue	68	0.4
171	Malignant Neoplasm of Connective and Other Soft Tissue	64	0.4
149	Malignant Neoplasm of Pharynx, Unspecified	59	0.4
170	Malignant Neoplasm of Bone	52	0.3
209	Myelofibrosis	49	0.3
173	Other Malignant Neoplasms of Skin	47	0.3
146	Malignant Neoplasm of Oropharynx	47	0.3
145	Malignant Neoplasm of Other Parts of Mouth	46	0.3
184	Malignant Neoplasm of Other and Unspecified Female Genital Organs	40	0.3
193	Malignant Neoplasm of Thyroid Gland	37	0.2
158	Malignant Neoplasm of Peritoneum and Retroperitoneal Tissue	34	0.2
163	Malignant Neoplasm of Other Respiratory Organs	27	0.2

TABLE 2.16 - Deaths Due to Malignant Neoplasms by Site Affected, Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE	NUMBER OF DEATHS	PERCENT
148	Malignant Neoplasm of Hypopharynx	25	0.2
142	Malignant Neoplasm of Salivary Gland	24	0.2
152	Malignant Neoplasm of Small Intestine and Duodenum	23	0.2
160	Malignant Neoplasm of Nose, Nasal Cavities, Middle Ear and Accessory Sinuses	23	0.2
186	Malignant Neoplasm of Testis	21	0.1
206	Monocytic Leukemia	20	0.1
147	Malignant Neoplasm of Nasopharynx	17	0.1
208	Polycythemia Vera	16	0.1
194	Malignant Neoplasm of Other Endocrine Glands	14	0.1
159	Malignant Neoplasm of Unspecified Digestive Organs	13	0.1
187	Malignant Neoplasm of Other and Unspecified Male Organs	10	0.1
190	Malignant Neoplasm of Eye	10	0.1
144	Malignant Neoplasm of Floor of Mouth	9	0.1
196	Secondary and Unspecified Malignant Neoplasm of Lymph Nodes	5	0.0
140	Malignant Neoplasm of Lip	4	0.0
143	Malignant Neoplasm of Gum	2	0.0
	TOTAL	15,249	100.0

TABLE 2.17 - Deaths Due to Malignant Neoplasms by Selected Sites Michigan Residents, 1968-1978

Year	Total[1]	Trachea Bronchus and Lung	Large Intestine Except Rectum	Breast	Prostate	Pancreas	Stomach	Ovary, Fallopian Tube and Broad Ligament	Bladder	Rectum and Rectosigmoid Junction
1968	13,292	2,468	1,395	1,258	674	674	718	413	376	410
1969	13,328	2,554	1,366	1,198	738	715	659	354	356	441
1970	13,551	2,663	1,470	1,209	734	665	674	397	380	387
1971	13,594	2,737	1,390	1,174	706	670	670	422	361	384
1972	14,045	2,927	1,426	1,268	748	728	651	427	413	383
1973	14,220	3,004	1,529	1,326	729	710	612	373	388	364
1974	14,241	3,095	1,556	1,307	714	694	582	413	391	375
1975	14,445	3,232	1,514	1,380	759	766	565	441	433	326
1976	14,880	3,375	1,595	1,289	820	741	517	434	394	346
1977	15,125	3,613	1,610	1,359	805	747	580	425	386	330
1978	15,249	3,694	1,626	1,370	855	736	568	408	400	338

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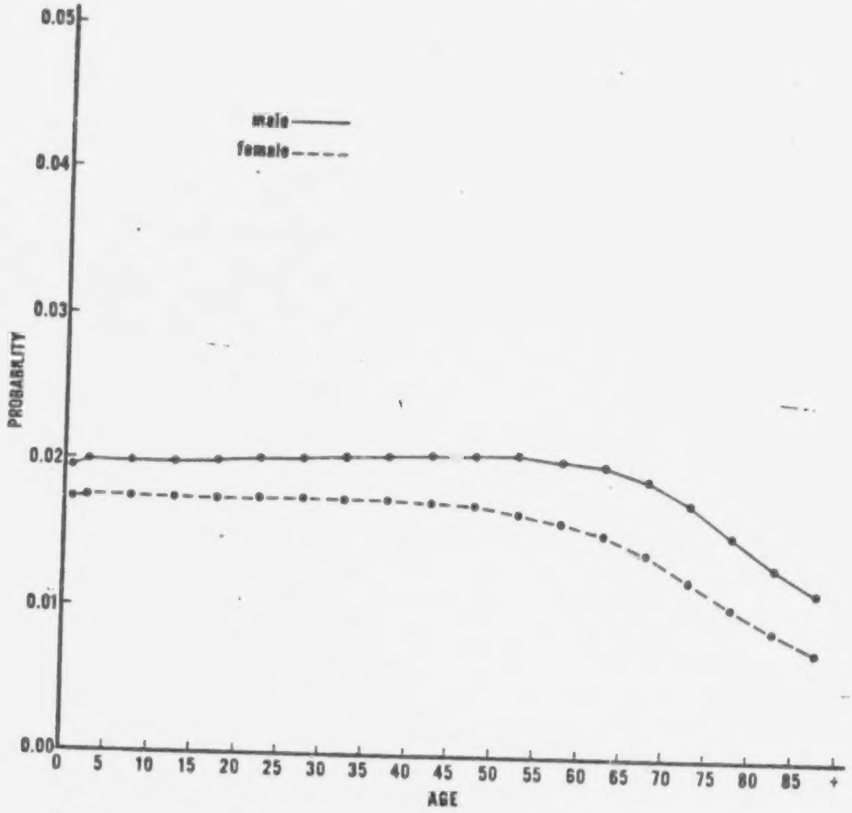
[1] Rows do not add to total as other malignant neoplasms categories are included only in the total.

Based upon 1976 through 1978 death data, the probability of death due to cancer is 0.198 for males and 0.174 for females at birth (Figure 2.15). The probability for males rises slowly to a peak of 0.210 for ages 45 through 54 then drops rapidly to 0.119 at ages 85 and over. Probabilities for females are more stable, displaying little change from birth to ages 45-49 then dimimishing to 0.077 at age 85 and over. This decreasing probability beyond age 49, noting the high cancer mortality rates of older age (Figure 2.11), indicates that age-specific death rates due to competing causes of death increase relatively faster with advancing age.

FIGURE 2.15 Probability of Eventually Dying from Cancer by Age and Sex Michigan Residents, 1976-1978[1]



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[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Cerebrovascular Disease

Deaths due to cerebrovascular disease (stroke) numbered 6,520 in 1978 or 8.7 percent of the 74,773 total Michigan resident deaths. This is 4.4 percent fewer stroke deaths than were observed in 1977 (6,818 deaths). Of the total in 1978, 2,778 were males and 3,742 were females.

The median age at death from stroke was 78 (Table 2.18). The median age for females was 80 years, 5 years higher than that for males. Deaths for white persons due to cerebrovascular disease displayed median ages several years higher than those for other than white persons. The median age was 67 years for other than white males and 77 years for white males. The median was 72 years for other than white females. This was 9 years less than that for white females (81 years).

The cerebrovascular disease death rate was 71.0 in 1978. The rate for females (80.2) was significantly higher than the rate for males (61.4). The age-specific death rates recorded in Table 2.19 and displayed in Figure 2.16 indicate that rates for males and females were similar below age 55. The rate for both sexes increased markedly in the older age groups. Rates for males were above those of females from ages 55 through 79. For ages 80 and over the rates for females were above those for males. The crude death rate for females exceeds that for males because of the larger proportion of women in the high risk older age groups. The age-adjusted rate of 44.9 for males was 11.7 percent higher than the age-adjusted rate for females of 40.2 in 1978.

Cerebrovascular disease death rates by age and race from Table 2.19 are graphically displayed in Figures 2.17 and 2.18. Rates for other than white

TABLE 2.18 - Deaths Due to Cerebrovascular Disease by Age, Race, and Sex, Michigan Residents, 1978

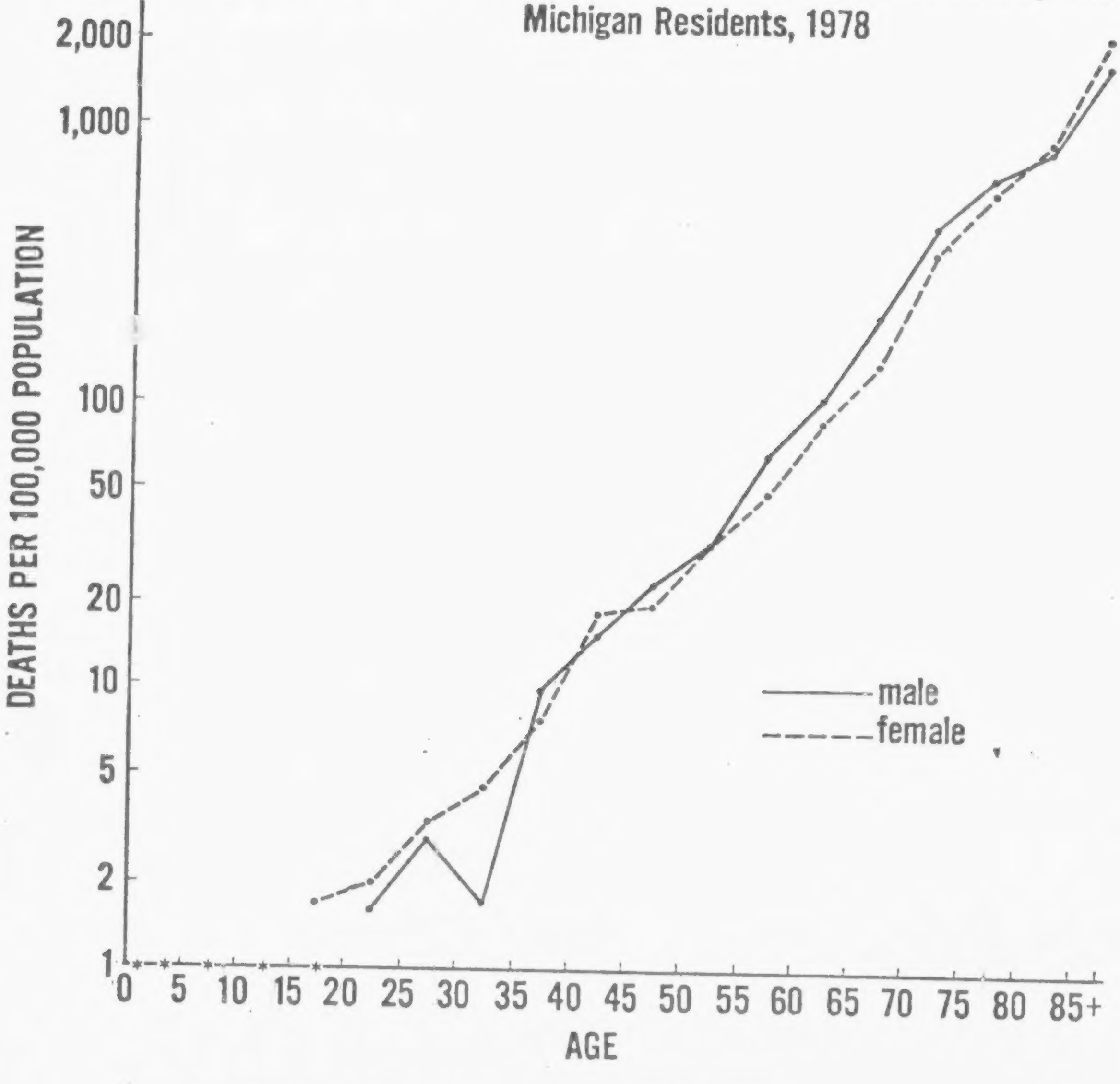
AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMAL
Under 1 Year.....	5	3	2	3	2	1	2	1	1	-	-	-
1-4 Years........	4	2	2	4	2	2	-	-	-	-	-	-
5-9 Years........	4	2	2	4	2	2	-	-	-	-	-	-
10-14 Years......	1	1	-	1	1	-	-	-	-	-	-	-
15-19 Years......	11	3	8	10	3	7	1	-	1	-	-	-
20-24 Years......	14	6	8	10	5	5	4	1	3	-	-	-
25-29 Years......	18	7	11	11	5	6	7	2	5	-	-	-
30-34 Years......	21	6	15	16	5	11	5	1	4	-	-	-
35-39 Years......	50	30	20	36	22	14	14	8	6	-	-	-
40-44 Years......	68	33	35	52	23	29	16	10	6	-	-	-
45-49 Years......	97	54	43	67	37	30	30	17	13	-	-	-
50-54 Years......	171	85	86	117	56	61	54	29	25	-	-	-
55-59 Years......	279	155	124	203	115	88	74	39	35	2	1	1
60-64 Years......	389	207	182	313	169	144	76	38	38	-	-	-
65-69 Years......	515	291	224	434	250	184	79	39	40	2	2	-
70-74 Years......	830	409	421	717	362	355	113	47	66	-	-	-
75-79 Years......	1,036	451	585	919	408	511	116	43	73	1	-	1
80-84 Years......	1,228	466	762	1,160	437	723	67	29	38	1	-	1
85-89 Years......	1,078	370	708	1,026	355	671	50	13	37	2	2	-
90 and Over......	701	197	504	666	189	477	33	7	26	2	1	1
All Ages	6,520	2,778	3,742	5,769	2,448	3,321	741	324	417	10	6	4
Median Age at Last Birthday	78	75	80	79	77	81	70	67	72	*	*	*

TABLE 2.19 - Cerebrovascular Disease Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	71.0	61.4	80.2	72.7	62.6	82.6	59.6	53.7	65.3
Under 1 Year.......	3.7	*	*	*	*	*	*	*	*
1-4 Years..........	*	*	*	*	*	*	*	*	*
5-9 Years..........	*	*	*	*	*	*	*	*	*
10-14 Years........	*	*	*	*	*	*	*	*	*
15-19 Years........	1.2	*	1.7	1.3	*	1.8	*	*	*
20-24 Years........	1.8	1.6	2.0	1.5	1.6	1.5	*	*	*
25-29 Years........	3.1	2.9	3.3	2.2	2.4	2.1	9.2	*	11.2
30-34 Years........	3.1	1.7	4.4	2.7	1.6	3.7	5.9	*	*
35-39 Years........	8.8	9.8	7.7	7.3	8.1	6.3	18.7	21.9	15.7
40-44 Years........	17.1	15.6	18.7	15.0	12.4	18.0	31.3	39.4	23.4
45-49 Years........	21.7	23.4	19.9	17.0	18.2	15.8	55.6	61.5	49.3
50-54 Years........	32.4	32.6	32.1	25.0	24.3	25.8	88.6	96.9	80.5
55-59 Years........	57.4	66.4	49.0	47.1	55.8	39.1	140.7	151.6	130.5
60-64 Years........	97.8	108.6	87.9	88.5	99.7	78.2	172.9	180.9	165.7
65-69 Years........	174.4	211.1	142.3	168.0	209.2	132.3	221.2	224.8	217.8
70-74 Years........	393.6	445.3	353.8	380.1	445.0	330.8	508.9	446.9	564.6
75-79 Years........	620.9	674.8	584.9	598.4	666.4	553.4	885.5	766.8	974.3
80-84 Years........	876.7	839.5	901.1	896.5	856.3	922.6	634.2	647.8	624.2
85 and Over........	2,019.2	1,753.6	2,173.2	2,117.7	1,882.8	2,251.4	1,035.4	609.5	1,330.6
Age-Adjusted Rate [1]	42.4	44.9	40.2	40.3	43.2	37.7	59.0	57.1	60.0

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940 see technical notes.

Figure 2.16 Age-Specific Cerebrovascular Disease Death Rates[1] by Sex
Michigan Residents, 1978



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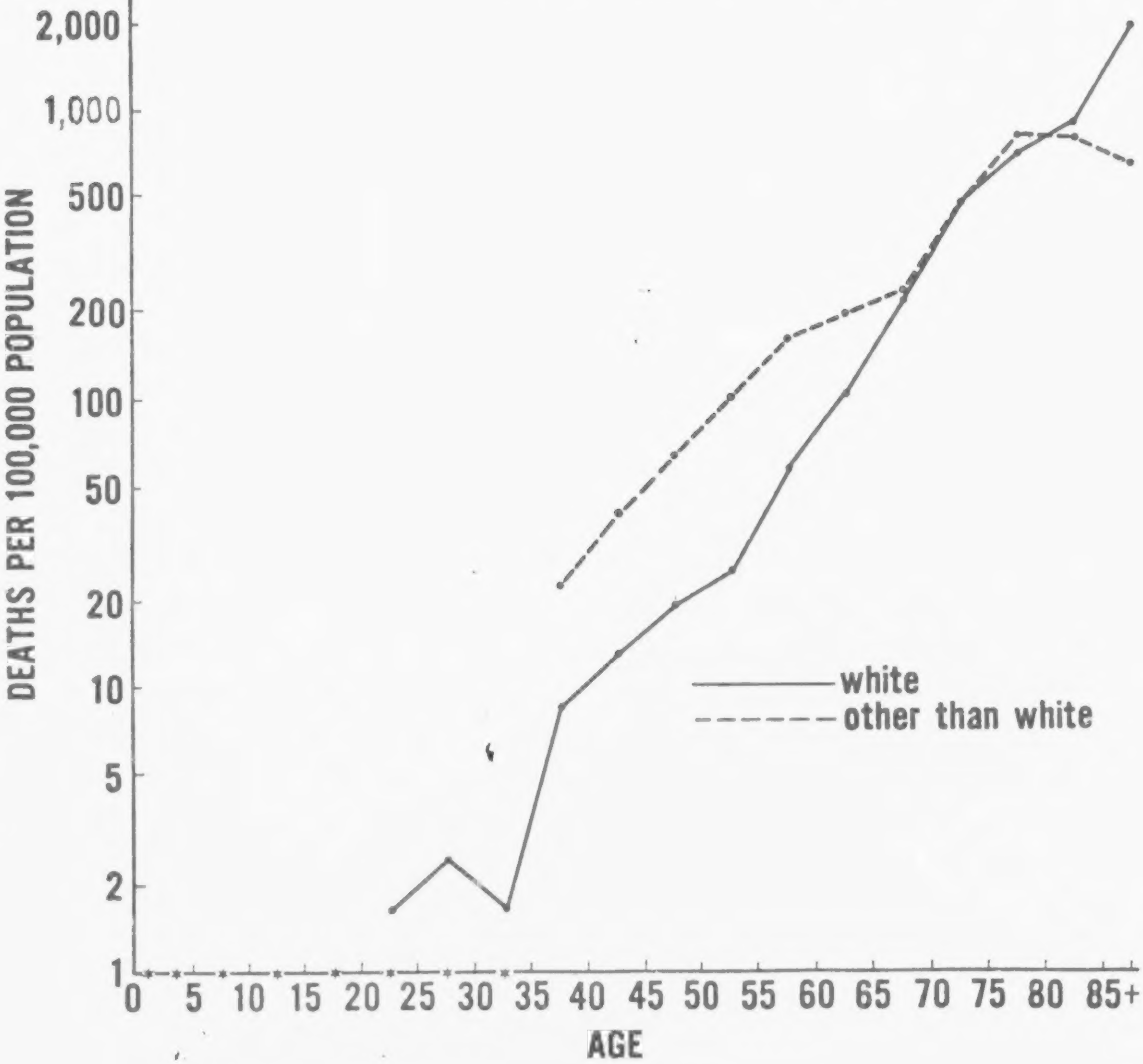
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.17 Age-Specific Cerebrovascular Disease Death Rates[1] by Race, Michigan Resident Males, 1978



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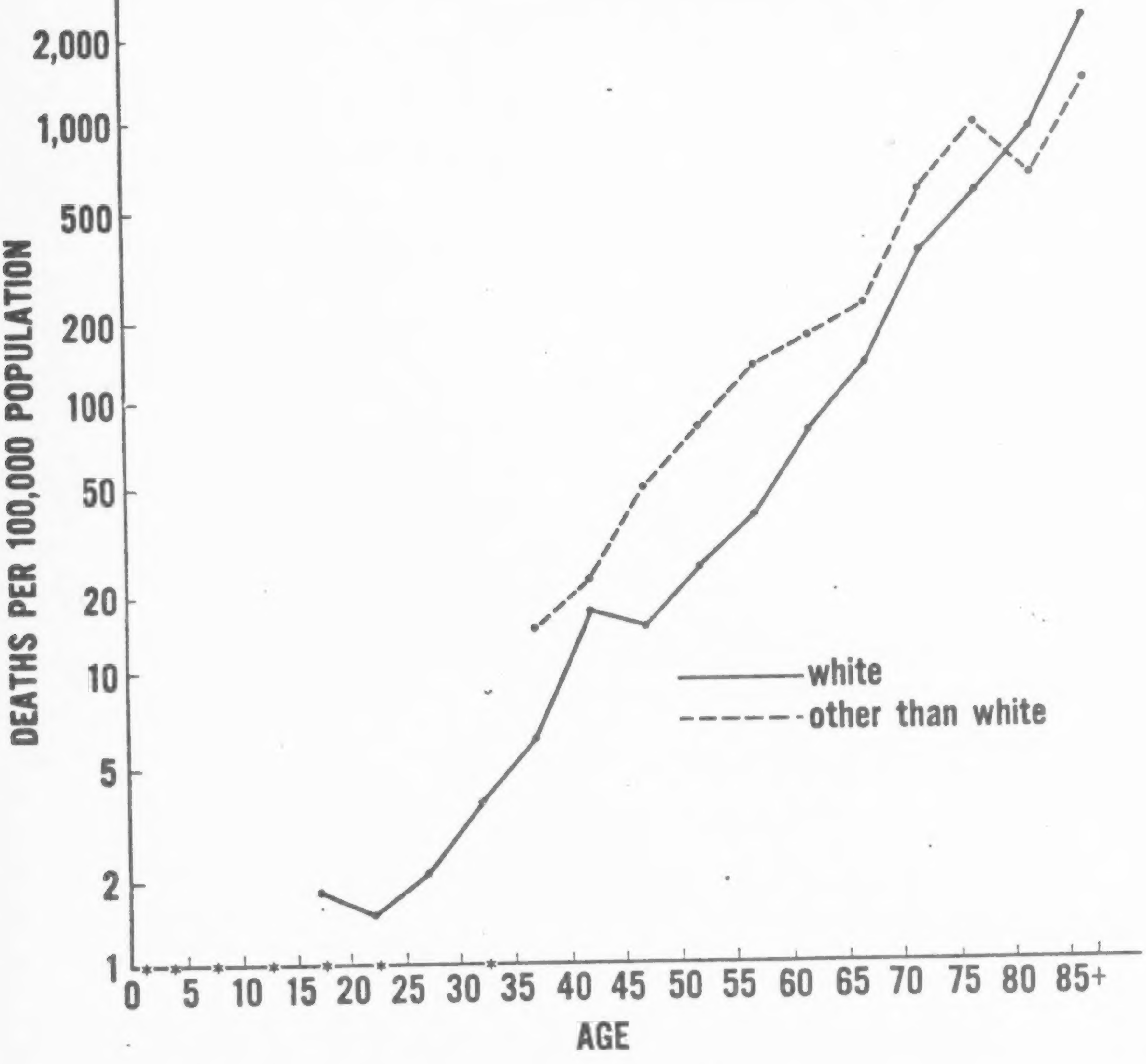
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.18 Age-Specific Cerebrovasculalar Disease Death Rates[1] by Race, Michigan Resident Females, 1978



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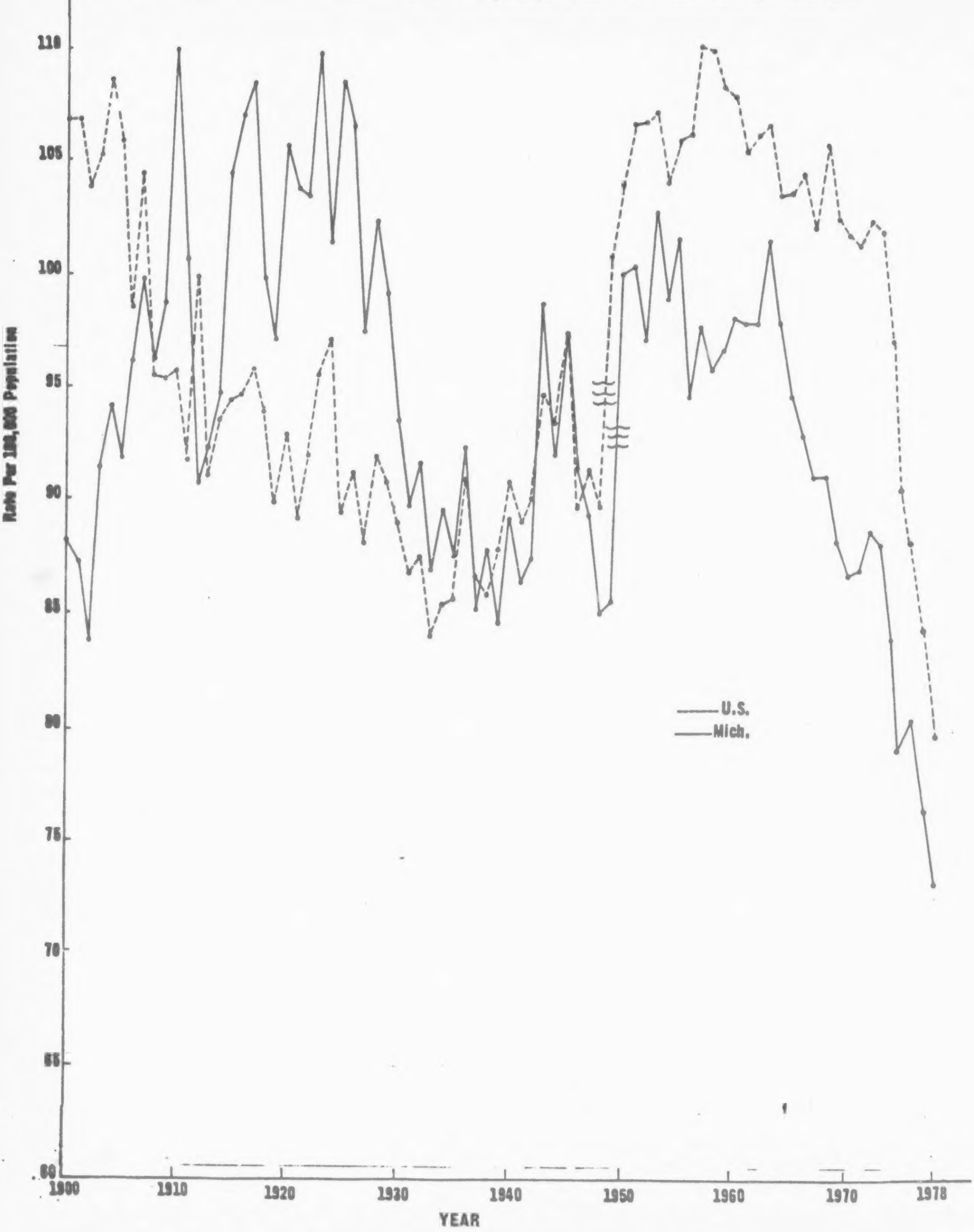
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

males and females were higher than comparable rates for white persons in all age groups below age 80. Rates for other than white persons were more than twice as high as the rates for white persons in about half the age-sex groups below age 80 while the rates for white persons were considerably higher than those for other than white persons beyond age 79. Although the crude rates for white males and females were, respectively, 16.6 percent and 26.5 percent higher than rates for other than white persons, age-adjusted rates indicate an opposite relationship. The cerebrovascular disease age-adjusted death rate for other than white males was 32 2 percent higher than that for white males while for other than white females the age adjusted rate was 59.2 percent higher than that for white females.

The historic pattern of cerebrovascular disease death rates has been one of strong variation (Figure 2.19). During the time period 1900-1949, the rates in Michigan ranged from a low of 83.9 in 1902 to a high of 110.0 eight years later. The national high and low rates for the years 1900-1948 were, respectively, 108.6 in 1904 and 84.1 in 1933. Michigan was below national rates from 1900 through 1907 but was generally, and sometimes markedly, higher from 1908 to 1938. Michigan and national rates were very similar over the next eight years, whereupon the Michigan rate slipped below the national rate and has so remained since 1946.

The 6th revision to ICDA cause of death coding was adopted in the year 1949 nationally and 1950 in Michigan. This revision resulted in a lack of direct comparability between cerebrovascular disease death rates prior to these dates and those afteradoption. Since the significant change in coding procedures in 1950, the cerebrovascular disease death rate in Michigan has ranged from 102.8 in 1953 to 71.0 in 1978. Recent rates over the last fifteen years have shown a clear downward tendency both nationally and in Michigan. In 1978, the Michigan rate was 10.2 percent lower than the provisional United States rate of 79.1.

FIGURE 2.19 - Cerebrovascular Disease Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



1 National rates are from death registration states for 1900-1932 and the United States for 1933-1978; United States rate for 1978 is provisional.

2 The comparability of cerebrovascular disease death rates from the 5th revisions of ICDA coding procedures with those of the 6th revision is considered weak. The comparability ratio is estimated to be 1.16. The 6th revision was adopted in 1949 for national cause-of-death statistics and in 1950 for Michigan Statistics. The comparability of cerebrovascular disease death rates through the 6th, 7th, and 8th revisions (1949 to date nationally and 1950 to date in Michigan) is high.

Age-adjusted rates for cerebrovascular disease deaths by race and sex are presented in Table 2.20. These rates have declined by 4 to 5 percent per year in both Michigan and the United States since 1970 with the other than white groups experiencing a somewhat more rapid reduction. Rates for other than white persons, however, remained substantially above rates for white persons throughout the period. Although Michigan and United States rates follow similar patterns, the state age-adjusted rates were generally lower than comparable national rates. This differential was especially marked for other than white males and females.

Acute but ill-defined cerebrovascular disease was most frequently given as the type of cerebrovascular disease causing death (2,404 deaths). Second in frequency was cerebral thrombosis which caused 1,709 deaths in 1978. These two cause of death categories comprised 63.1 percent of all stroke deaths. Generalized ischemic cerebrovascular disease and cerebral hemorrhage were the 3rd and 4th most frequent conditions causing stroke deaths. Together, the four most frequent types of cerebrovascular disease deaths accounted for 91.8 percent of all such deaths in Michigan (Table 2.21).

The variation in cerebrovascular disease deaths by specific type of condition is shown for the years 1968 to 1978 in Table 2.22. Declines can be observed in the frequency of deaths due to cerebral thrombosis and cerebral hemorrhage. On the other hand, the numbers of deaths attributed to acute ill-defined cerebrovascular disease and generalized ischemic cerebrovascular disease were higher in 1978 than they were in 1968.

TABLE 2.20

Age-Adjusted Cerebrovascular Disease Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	64.0	70.4	58.9	60.7	67.4	55.4	93.8	95.4	91.6
	1971	63.2	71.9	56.2	60.4	69.7	52.9	87.4	89.1	85.9
	1972	62.9	68.8	57.9	60.1	66.0	55.2	85.0	91.0	79.1
	1973	60.8	66.2	56.1	58.2	63.9	53.5	80.4	84.4	77.1
	1974	56.5	62.5	51.4	54.2	60.3	49.1	73.3	78.3	68.4
	1975	51.2	55.9	47.3	49.5	53.9	45.8	64.5	71.4	58.2
	1976	49.3	52.4	46.8	47.5	50.7	44.8	63.0	64.6	61.4
	1977	45.4	49.4	42.0	43.5	47.6	40.1	60.2	64.2	56.8
	1978	42.4	44.9	40.2	40.3	43.2	37.7	59.0	57.1	60.0
U.S.	1970	66.3	73.2	60.8	61.8	68.8	56.2	107.0	113.5	101.4
	1971	65.7	72.5	60.2	61.5	68.4	56.1	108.1	115.9	101.7
	1972	65.0	72.7	59.1	61.0	68.8	54.9	101.3	107.8	96.0
	1973	63.7	70.4	58.5	59.6	66.3	54.5	99.7	106.7	93.8
	1974	59.9	66.5	54.9	56.4	63.0	51.4	90.9	98.3	84.7
	1975	54.5	60.6	49.8	51.3	57.4	46.8	82.0	89.3	76.1
	1976	51.4	56.8	47.3	48.5	53.7	44.5	77.6	84.6	72.0
	1977	48.2	53.5	44.2	45.3	50.5	41.5	73.4	79.8	68.0
	1978	44.4 Pr	---	---	---	---	---	---	---	---

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

TABLE 2.21 - Deaths Due to Cerebrovascular Disease by Detailed Cause, Michigan Residents, 1978

CDA LIST NUMBER	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENT
436	Acute Ill-Defined Cerebrovascular Disease	2,404	36.9
433	Cerebral Thrombosis	1,709	26.2
437	Generalized Ischemic Cerebrovascular Disease	1,009	15.5
431	Cerebral Hemorrhage	864	13.3
430	Subarachnoid Hemorrhage	291	4.5
438	Other and Ill-Defined Cerebrovascular Disease	127	1.9
432	Occlusion of Precerebral Arteries	85	1.3
434	Cerebral Embolism	29	0.4
435	Transient Cerebral Ischemia	2	0.0
	TOTAL	6,520	100.0

TABLE 2.22

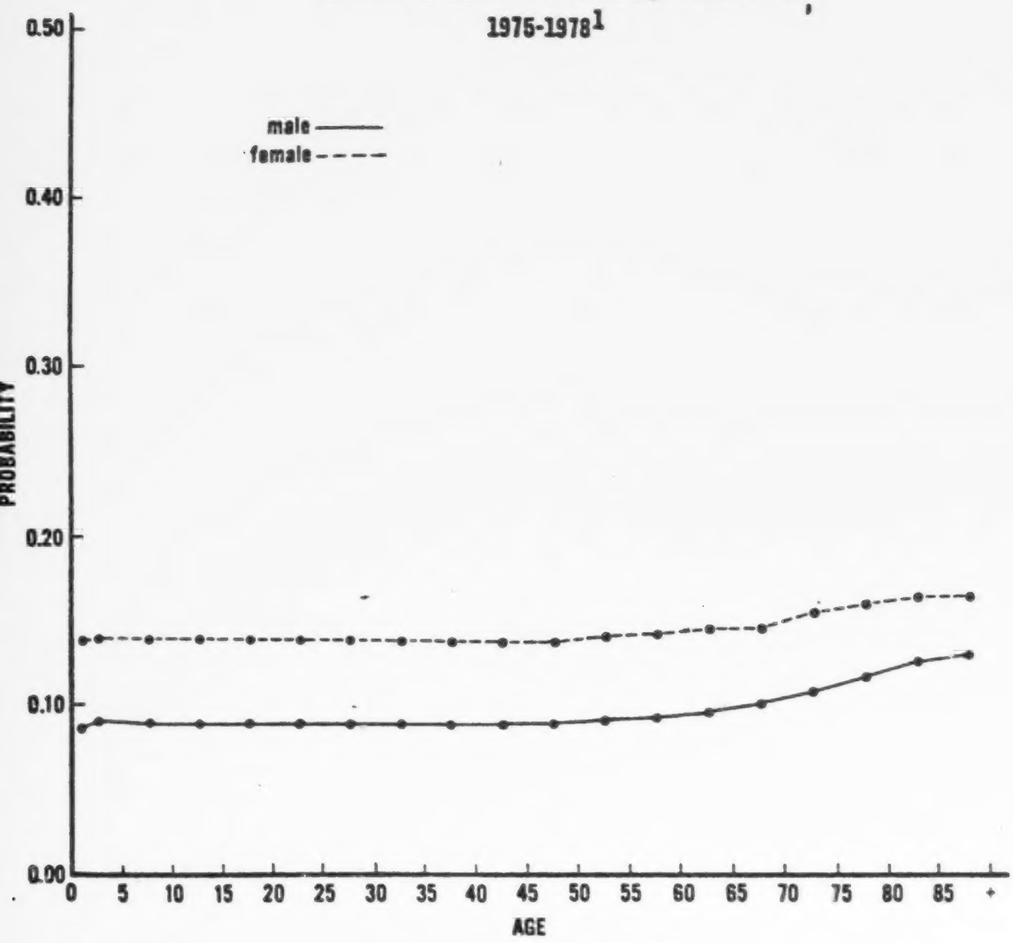
Deaths Due to Specified Cerebrovascular Diseases
Michigan Residents, 1968 - 1978

Year	Total[1]	Acute Ill-defined Cerebrovascular Disease	Cerebral Thrombosis	Generalized Ischemic Cerebrovascular Disease	Cerebral Hemorrhage	Subarachnoid Hemorrhage
1968	7,913	2,231	2,563	841	1,682	386
1969	7,706	2,327	2,417	886	1,413	433
1970	7,691	2,303	2,409	905	1,438	439
1971	7,826	2,277	2,485	964	1,434	434
1972	7,999	2,364	2,408	1,211	1,358	417
1973	7,987	2,387	2,446	1,241	1,233	379
1974	7,645	2,439	2,281	1,188	1,114	359
1975	7,262	2,404	2,084	1,194	976	353
1976	7,354	2,430	2,090	1,245	963	341
1977	6,818	2,421	1,774	1,163	864	343
1978	6,520	2,404	1,709	1,009	864	291

[1] Rows do not add to total as other cerebrovascular diseases are included in total.

Based upon the mortality experience of 1976 through 1978 in Michigan, at birth a Michigan male faces a 0.082 chance of dying from cerebrovascular disease while the probability for a female at birth is 0.133. Females are consistently more likely to eventually die from this cause than males through all age intervals, according to the 1976-1978 data (Figure 2.20). This results primarily from the higher risks from competing causes for males. At age 60 probabilities for males start rising appreciably, reaching 0.131 by age 85. Data for females reveal a similar tendency, though it starts at somewhat older ages and displays a slower rate of change. The peak probability for females was 0.167 for the age interval 85 and over.

FIGURE 2.20 Probability of Eventually Dying from Cerebrovascular Disease by Age and Sex, Michigan Residents 1975-1978[1]



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[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Accidents

About 5.3 percent of all Michigan resident deaths were attributed to accidents. Of the total 3,970 accidental deaths, 2,756 were to males while 1,214 were to females.

The median age at death among accident victims was 33 years (Table 2.23). The median age among males was 30, fourteen years lower than the 44 year median for females. This differential is predominantly traceable to the relatively large number of accidental deaths of white males in the younger age intervals. The median age of accidental death for white males was 29 years compared to 47 years for white females. The median age for other than white males was 37 years, 5 years higher than that for other than white females.

Accidental deaths among white males were especially concentrated in the 15-19 and 20-24 age ranges. These two age groups accounted for 31.0 percent of accidental deaths for white males compared to less than 20 percent for all other race/sex categories.

The crude death rate for males from accidents is more than twice as high as that for females. Accident death rates for males are greater than those for females in all age groups beyond age 1. The differential between rates for males and females was greatest between ages 15 and 34. In the 25-29 age group, the rate for males was 6.2 times that for females (Table 2.24).

Mortality rates by sex contained in Table 2.24 are displayed graphically in Figure 2.21. Although age-specific rates for males are generally much higher than those for females, the patterns of change are quite similar. Mortality rates rose

TABLE 2.23 - Deaths Due to Accidents by Age, Race, and Sex, Michigan Residents, 1978

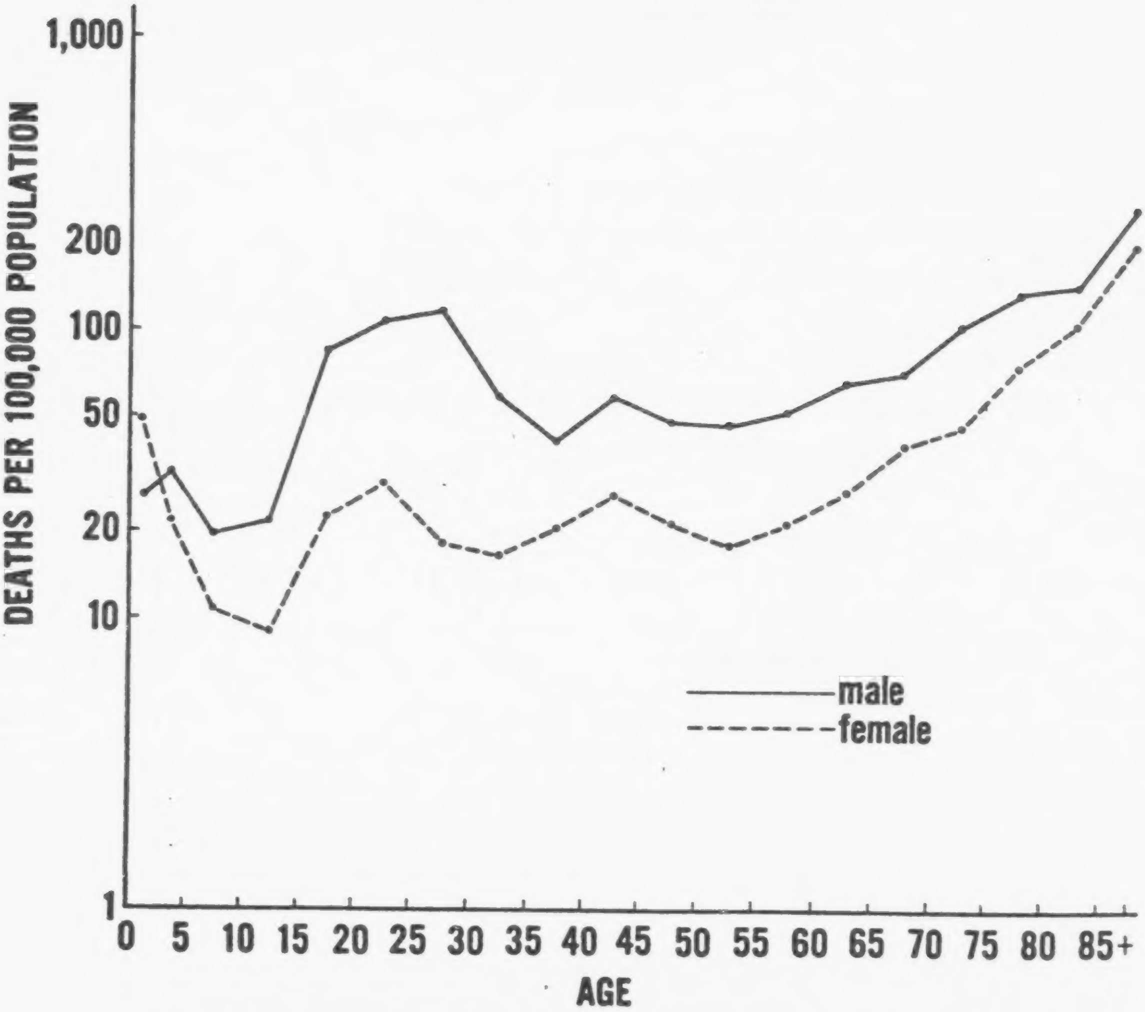
AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	50	18	32	39	13	26	10	4	6	1	1	-
1-4 Years........	148	90	58	107	71	36	41	19	22	-	-	-
5-9 Years........	128	84	44	101	67	34	26	16	10	1	1	-
10-14 Years......	144	103	41	126	91	35	18	12	6	-	-	-
15-19 Years......	495	390	105	457	368	89	35	19	16	3	3	-
20-24 Years......	520	404	116	479	374	105	40	30	10	1	-	1
25-29 Years......	335	275	60	288	238	50	42	33	9	5	4	1
30-34 Years......	259	203	56	227	173	54	29	27	2	3	3	-
35-39 Years......	181	128	53	145	104	41	34	23	11	2	1	1
40-44 Years......	176	126	50	137	97	40	39	29	10	-	-	-
45-49 Years......	157	111	46	129	90	39	27	20	7	1	1	-
50-54 Years......	173	124	49	145	102	43	28	22	6	-	-	-
55-59 Years......	176	122	54	150	101	49	25	20	5	1	1	-
60-64 Years......	185	127	58	156	105	51	29	22	7	-	-	-
65-69 Years......	161	98	63	144	87	57	16	10	6	1	1	-
70-74 Years......	152	97	55	135	84	51	17	13	4	-	-	-
75-79 Years......	166	91	75	144	76	68	19	13	6	3	2	1
80-84 Years......	168	79	89	154	74	80	14	5	9	-	-	-
85-89 Years......	123	54	69	112	49	63	11	5	6	-	-	-
90 and Over......	73	32	41	71	31	40	2	1	1	-	-	-
All Ages	3,970	2,756	1,214	3,446	2,395	1,051	502	343	159	22	18	4
Median Age at Last Birthday	33	30	44	32	29	47	36	37	32	*	*	*

TABLE 2.24 - Accident Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	43.2	60.9	26.0	43.6	61.5	26.2	40.6	57.1	25.0
Under 1 Year.......	37.1	26.1	48.6	36.4	24.7	48.7	40.0	*	47.9
1-4 Years..........	26.6	31.7	21.3	23.2	30.0	16.0	43.6	40.1	47.1
5-9 Years..........	14.9	19.2	10.5	13.7	17.8	9.5	21.9	27.5	16.3
10-14 Years........	15.3	21.6	8.9	15.8	22.5	9.0	12.5	16.6	8.4
15-19 Years........	52.5	82.8	22.3	57.9	93.1	22.4	23.7	26.2	21.3
20-24 Years........	67.4	107.5	29.4	73.7	118.1	31.5	33.8	50.5	17.7
25-29 Years........	58.3	112.8	18.1	58.6	113.5	17.8	56.5	108.3	20.1
30-34 Years........	37.7	58.8	16.4	38.3	57.5	18.3	34.0	69.0	*
35-39 Years........	31.9	41.7	20.3	29.8	38.8	18.9	45.5	62.8	28.9
40-44 Years........	44.2	59.6	26.7	39.4	52.1	24.8	76.4	114.3	38.9
45-49 Years........	35.1	48.1	21.3	33.1	44.8	20.5	50.0	72.3	25.6
50-54 Years........	32.7	47.6	18.3	31.0	44.3	18.2	45.9	75.5	19.3
55-59 Years........	36.2	52.2	21.4	34.9	49.1	21.7	46.9	77.7	18.1
60-64 Years........	46.5	66.6	28.0	44.1	61.9	27.7	66.0	104.7	30.5
65-69 Years........	54.5	71.1	40.0	55.9	73.1	41.0	44.8	57.7	32.7
70-74 Years........	72.1	105.6	46.2	71.6	103.3	47.5	76.6	123.6	*
75-79 Years........	99.5	136.2	75.0	95.6	127.4	74.6	145.0	231.8	80.1
80-84 Years........	119.9	142.3	105.2	118.9	145.0	101.9	132.5	111.7	147.8
85 and Over........	222.5	266.0	197.2	228.5	275.4	201.8	162.2	182.9	147.8
Age-Adjusted Rate [1]	41.6	61.8	22.9	41.5	62.1	22.5	43.1	64.1	24.6

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

Figure 2.21 Age-Specific Accident Death Rates[1] by Sex, Michigan Residents, 1978



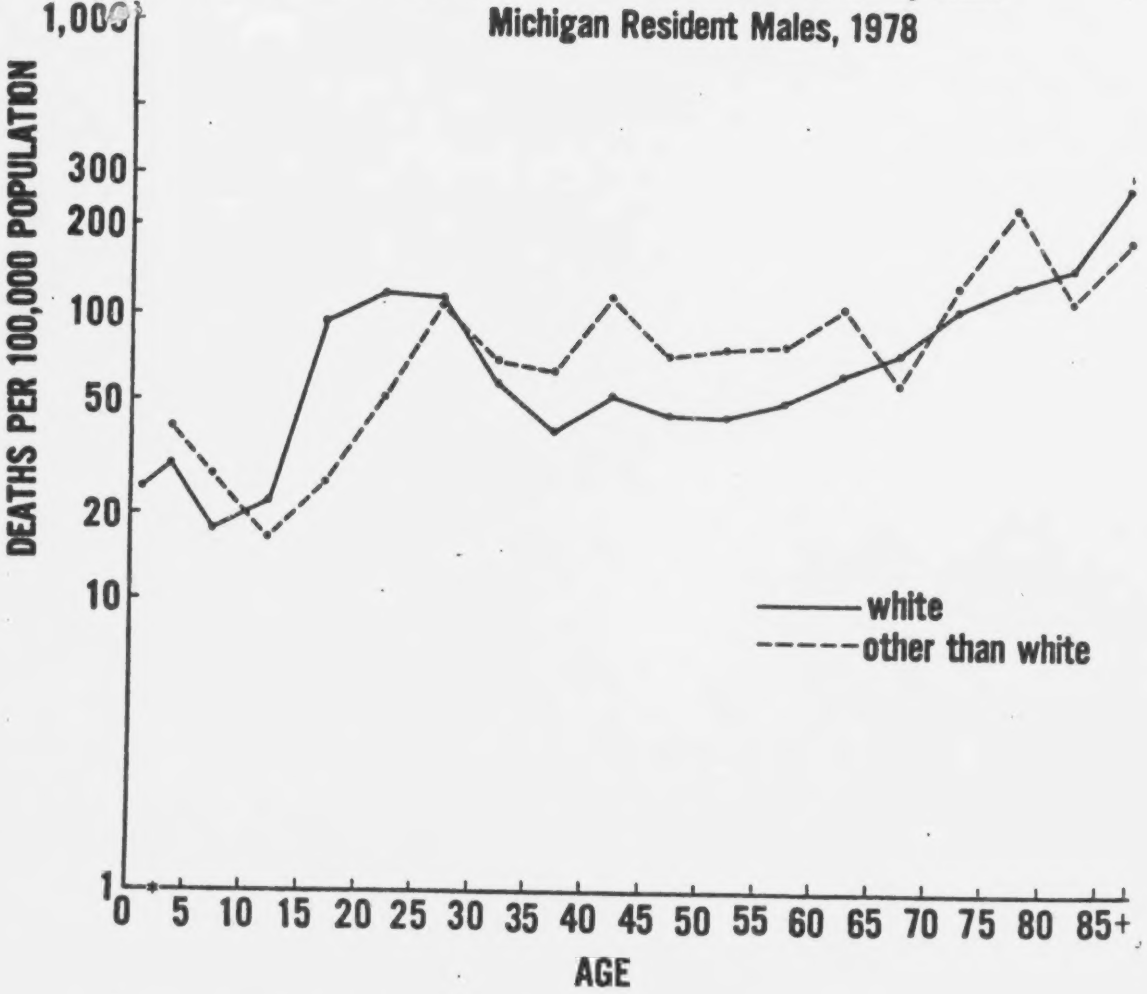
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

sharply for both sexes in the 15-19 age group. The rate for females reached an initial peak in the 20-24 age group while the highest rate for males before age 75 occurred in the 25-29 age group. The rates for both groups generally decreased after this initial peak, and then increased continuously beyond age 54. The differential in rates between males and females dropped steadily after age 54.

Accident death rates for white and other than white persons are quite similar. While crude rates for white persons are slightly higher than those for other than white persons, age-adjusted rates for white persons are slightly lower than those for other than white persons (Table 2.24). The relationship between age-specific rates for white and other than white persons is graphically displayed in Figures 2.22 and 2.23. The rate for white males is higher from the 10-14 age group through the 25-29 age group. The rate for other than white males then surpasses that for white males and remains higher until ages 65-69. The pattern of age-specific rates for females is similar.

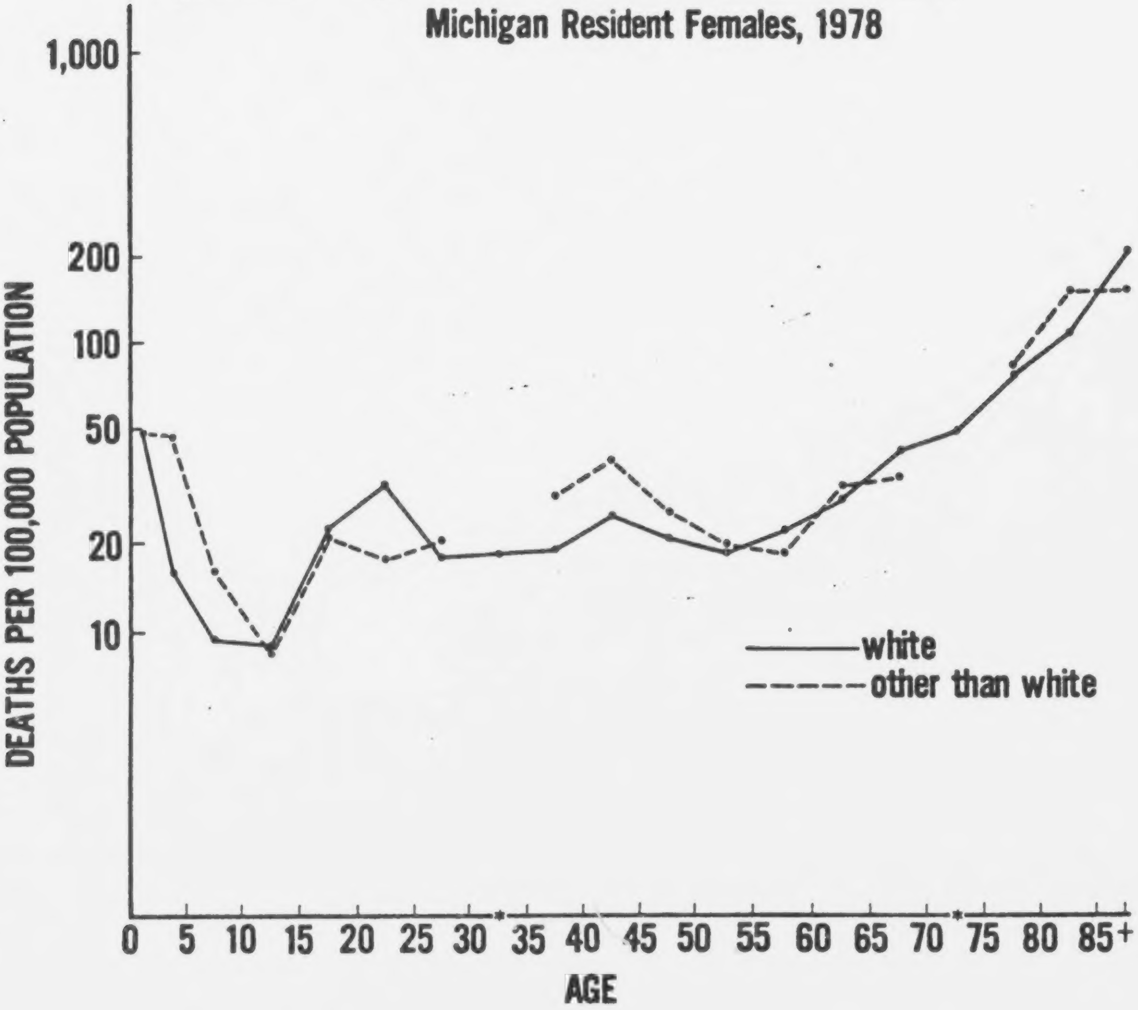
Michigan's accident death rate in 1900 was 71.9. The lowest rate observed in this century was 42.0 in 1958, and the highest rate occurred in 1936 when 103.1 persons per 100,000 died from accidental causes. National rates have varied from 101.8 in 1907 to 46.9 in 1976. Michigan's rates have been below national rates fairly consistently since 1900. The last time Michigan's rate was above that of the United States was in 1955. The accident death rate for Michigan in 1978 was 43.2, 12.7 percent below the provisional rate of 49.5 for the nation (Figure 2.24).

Figure 2.22 Age-Specific Accident Death Rates by Race[1]
Michigan Resident Males, 1978



[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.23 Age-Specific Accident Death Rates[1] by Race
Michigan Resident Females, 1978



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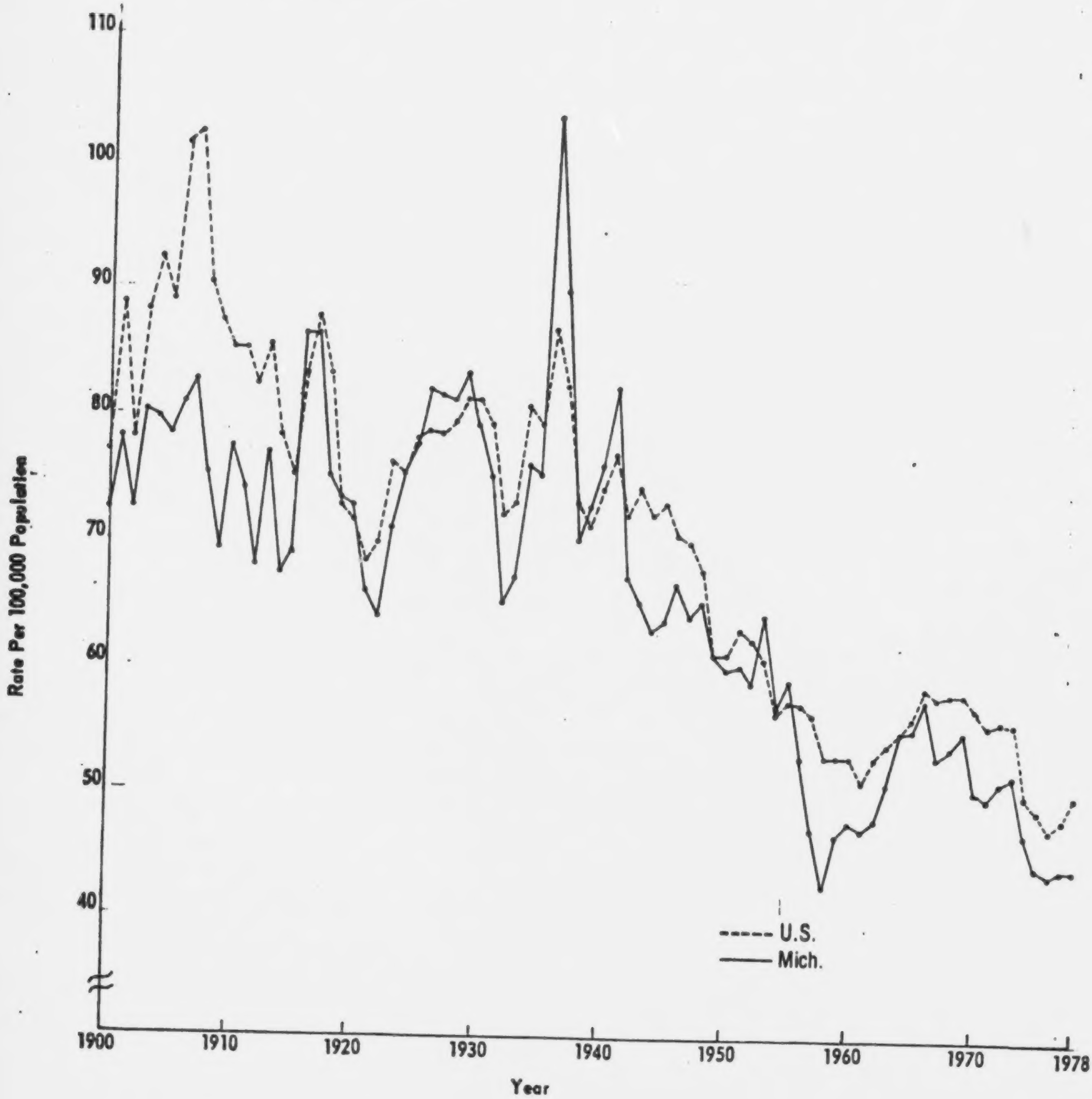
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

FIGURE 2.24—Accident Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1]National rates are from death registration states for 1900-1932 and the United States for 1933-1976; U. S. rate for 1978 is provisional.

[2]Accidental death rates since 1900 are suitable for general comparison over time but detailed study (such as time series) requires special consideration. See Technical Notes.

Michigan's age-adjusted rate for accidental deaths also is below the comparable national rate in the 1970's (Table 2.25). The age-adjusted rates by race and sex declined for each population subgroup during this period. The most significant decline occurred in the rates for other than white persons. The rate for other than white persons was 19 percent higher than that for white persons in 1970 but only 4 percent higher in 1978. This differential declined nationally from 43 percent in 1970 to 25 percent in 1977.

Motor vehicle traffic accidents accounted for 2,098 deaths in 1978, an increase of 7.0 percent over the 1977 total of 1960 deaths (Table 2.26). Accidental falls were the second most frequent type of accidental deaths, resulting in 537 deaths in 1978. Accidents caused by fire, accidental drownings, and accidents mainly of an industrial type were third, fourth and fifth in frequency causing 233, 205, and 178 deaths respectively.

Between 1968 and 1978, there were decreases in the frequency of deaths due to motor vehicle traffic accidents, accidental falls, and accidents caused by fire (Table 2.27). There was a sharp decline in motor vehicle traffic accident deaths in 1974 and 1975. Since 1975 the number of deaths in this category has risen, but remains substantially less than in 1970. Deaths due to accidents of an industrial type have more than doubled since 1970.

Of the total of 3,970 accidental deaths, 2,169 or 55 percent occurred on streets and highways (Table 2.28). The second most common place of occurrence was the home with 673 deaths (17 percent). There were 97 accidental deaths at

TABLE 2.25

Age-Adjusted Accident Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	48.6	71.5	27.3	47.5	69.8	26.7	56.5	84.9	30.7
	1971	47.8	70.2	26.8	46.8	68.4	26.5	55.0	85.1	27.9
	1972	48.9	73.3	26.1	48.5	72.5	25.9	52.1	80.8	26.0
	1973	49.2	72.8	26.8	48.3	71.5	26.2	55.1	83.3	29.2
	1974	43.8	65.4	23.3	43.4	64.3	23.3	47.6	74.6	22.4
	1975	41.9	62.3	22.6	41.5	61.8	22.3	45.3	67.8	24.9
	1976	40.6	59.8	22.7	40.8	60.0	22.9	40.1	60.6	21.1
	1977	41.4	61.0	23.2	41.5	61.2	23.1	42.3	62.5	23.5
	1978	41.6	61.8	22.9	41.5	62.1	22.5	43.1	64.1	24.6
U.S.	1970	53.7	80.7	28.2	51.0	76.2	27.2	72.8	115.7	35.1
	1971	52.0	77.1	28.2	49.4	72.9	27.0	71.6	117.7	36.1
	1972	52.0	77.5	28.0	49.8	73.5	27.2	68.8	109.3	33.4
	1973	51.7	77.4	27.4	49.5	73.6	26.4	67.5	106.8	33.2
	1974	46.0	69.4	23.8	44.3	66.6	22.9	58.5	92.3	29.0
	1975	44.8	67.7	23.1	43.1	64.8	22.4	56.9	90.7	27.6
	1976	43.2	64.7	22.7	41.8	62.3	22.2	53.2	84.6	25.8
	1977	43.8	65.5	23.2	42.5	63.2	22.7	53.1	84.5	25.8
	1978	45.3 Pr.	---	---	---	---	---	---	---	---

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

TABLE 2.26

Deaths Due to Accidents by Type of Accident, Michigan Residents, 1978

ICDA LIST NUMBER	TYPE OF ACCIDENT	NUMBER OF DEATHS	PERCENT
E810-E819	Motor Vehicle Traffic Accidents	2,098	52.8
E880-E887	Accidental Falls	537	13.5
E890-E899	Accidents Caused by Fire and Flames	233	5.9
E910	Accidental Drowning and Submersion	205	5.2
E916-E921, E923-E928	Accidents Mainly of Industrial Type	178	4.5
E911-E912	Inhalation and Ingestion of Food Causing Obstruction	141	3.6
E913-E915, E929	Other Accidents	125	3.1
E870-E877	Accidental Poisoning by Gases and Vapors	86	2.2
E830-E838	Water Transport Accidents	58	1.5
E850-E859	Accidental Poisonings by Drugs and Medicaments	56	1.4
E900-E909	Accidents Due to Natural and Environmental Factors	45	1.1
E820-E823	Motor Vehicle Non-Traffic Accidents	40	1.0
E930-E936	Surgical and Medical Complications and Misadventures	38	1.0
E922	Accidents Caused by Firearm Missile	37	0.9
E940-E949	Late Effects of Accidental Injury	32	0.8
E840-E845	Air and Space Transport Accidents	26	0.7
E860-E869	Accidental Poisonings by Other Solid or Liquid Substances	20	0.5
E800-E807	Railway Accidents	13	0.3
E825-E827	Other Road Vehicle Accidents	2	0.1
	TOTAL	3,970	100.1

TABLE 2.27 - **Deaths Due to Selected Types of Accidents**
Michigan Residents, 1968 - 1978

Year	Total[1]	Motor Vehicle Traffic Accidents	Falls	Fire and Flames	Drowning and Submersion	Industrial Type	Inhalation, Ingestion of Food Causing Obstruction	Poisoning by Gases and Vapors	Water Transport	Poisoning by Drugs and Medicaments
1968	4,603	2,413	737	298	199	81	138	78	98	38
1969	4,766	2,529	713	284	259	90	117	102	89	54
1970	4,428	2,275	724	236	231	98	127	98	67	86
1971	4,426	2,234	674	288	224	128	125	90	64	91
1972	4,566	2,406	653	263	244	182	118	106	62	89
1973	4,630	2,326	652	264	294	117	135	103	67	89
1974	4,211	1,883	685	315	275	77	151	99	47	100
1975	4,002	1,808	618	260	293	131	139	75	56	125
1976	3,912	1,957	580	233	235	161	143	87	35	101
1977	3,945	1,960	564	295	238	221	105	69	33	58
1978	3,970	2,098	537	233	205	178	141	86	58	56

[1] - Rows do not add to total as other categories of accidental deaths are included only in the total.

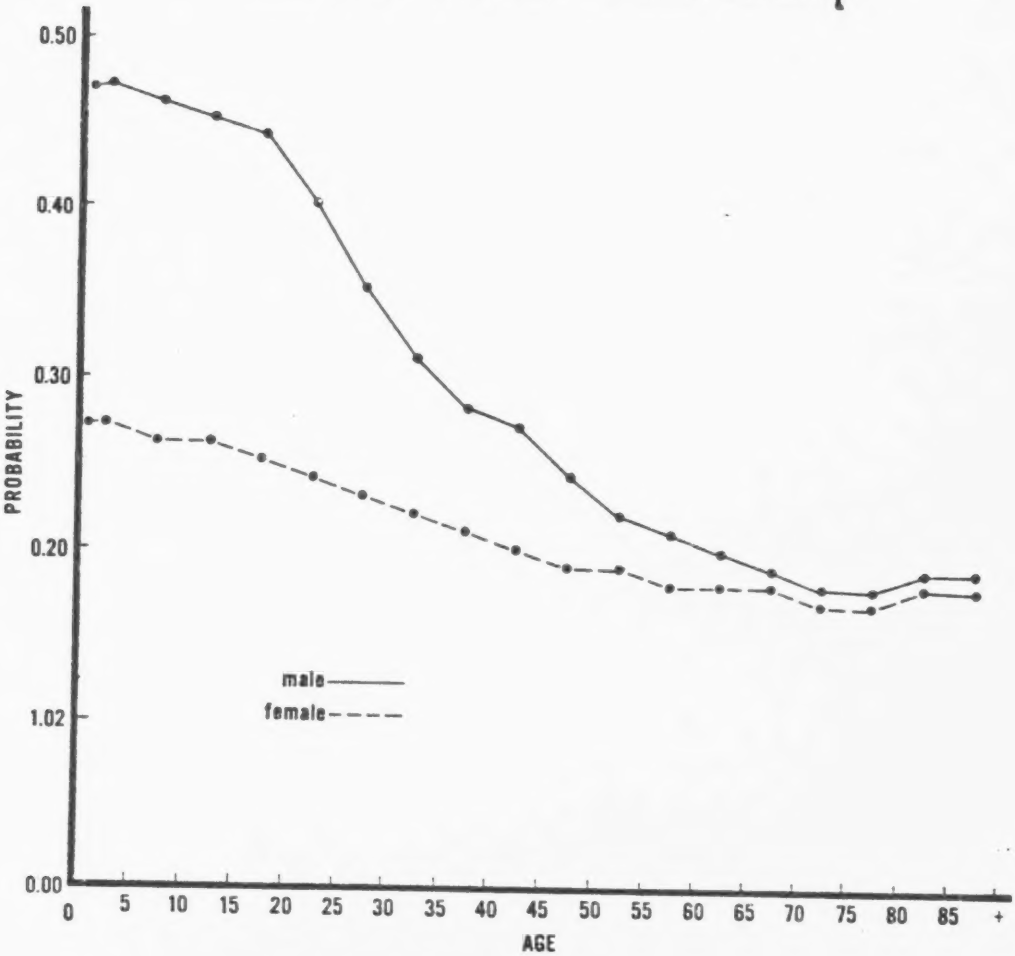
TABLE 2.28 - Deaths Due to Accidents
By Place of Injury
Michigan Residents - 1978

PLACE	NUMBER OF DEATHS
Street and Highway	2169
Home	673
Industrial Place and Premises	97
Farm	49
Resident Institution	43
Public Building	41
Place for Recreation and Sport	34
Mine and Quarry	14
Other Specified Places	298
Place Not Specified	552
TOTAL	3970

industrial places and premises, 49 on farms and 43 at resident institutions.

It can be seen from Figure 2.25 that the probability of eventually suffering accidental death is greater in the younger age groups than later in life. According to Michigan mortality data from the years 1976 through 1978 the probability of eventually dying from accidental causes is 0.047 for males and 0.028 for females at birth. Probabilities for males decline rather rapidly while those for females decline moderately. Probabilities for males remain much higher until about age 55 and slightly higher after that age. For both sexes, the chance of accidental death increases slightly in the 80-84 and 85 and over age intervals.

FIGURE 2.25 - Probability of Eventually Dying from Accidental causes by Age and Sex, Michigan Residents, 1976-1978[1]



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[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Influenza and Pneumonia

One of every 37 deaths that occurred to Michigan residents in 1978 was due to influenza and pneumonia. There were a total of 2,003 such deaths of which 1,026 were to males and 977 were to females.

The overall median age at death in 1978 for those dying from influenza and pneumonia was 78 years (Table 2.29). This is well above the median age of 71 years for all deaths. The median age for white males (77) was less than that for white females (82) by five years. The male to female differential was four years (64 to 68) for persons of all other races. The median age at death for white persons was significantly higher than that for other than white persons.

The overall crude death rate for influenza and pneumonia deaths in 1978 was 21.8. The crude rate of 22.7 for males was 9 percent higher than the rate of 20.9 for females. On an age-adjusted basis, this differential increased significantly. The rate for males exceeded that for females by 52 percent (Table 2.30).

The age-specific death rates for males and females given in Table 2.30 are graphically displayed in Figure 2.26. Note the high influenza and pnuemonia death rates for both sexes under 1 year of age. Influenza and pneumonia death rates increase rapidly beyond age 54 with rates for males significantly higher than for females.

TABLE 2.29 - Deaths Due to Influenza and Pneumonia by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year	47	26	21	38	19	19	9	7	2	-	-	-
1-4 Years	20	6	14	16	4	12	4	2	2	-	-	-
5-9 Years	4	3	1	4	3	1	-	-	-	-	-	-
10-14 Years	8	6	2	3	2	1	5	4	1	-	-	-
15-19 Years	11	6	5	9	5	4	2	1	1	-	-	-
20-24 Years	15	8	7	11	6	5	4	2	2	-	-	-
25-29 Years	21	13	8	14	9	5	7	4	3	-	-	-
30-34 Years	14	9	5	7	6	1	7	3	4	-	-	-
35-39 Years	11	7	4	7	6	1	4	1	3	-	-	-
40-44 Years	22	8	14	19	6	13	3	2	1	-	-	-
45-49 Years	36	20	16	21	11	10	15	9	6	-	-	-
50-54 Years	50	23	27	36	18	18	14	5	9	-	-	-
55-59 Years	69	49	20	58	40	18	11	9	2	-	-	-
60-64 Years	119	76	43	104	64	40	15	12	3	-	-	-
65-69 Years	150	91	59	132	79	53	18	12	6	-	-	-
70-74 Years	218	137	81	195	123	72	23	14	9	-	-	-
75-79 Years	255	132	123	238	122	116	16	9	7	1	1	-
80-84 Years	352	179	173	339	175	164	12	4	8	1	-	1
85-89 Years	322	145	177	304	133	171	17	11	6	1	1	-
90 and Over	259	82	177	245	78	167	14	4	10	-	-	-
All Ages	2,003	1,026	977	1,800	909	891	200	115	85	3	2	1
Median Age at Last Birthday	78	75	81	79	77	82	64	64	68	*	*	*

TABLE 2.30 - Influenza and Pneumonia Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	21.8	22.7	20.9	22.7	23.2	22.2	16.1	19.0	13.3
Under 1 Year.......	34.8	37.7	31.9	34.6	33.6	35.6	36.0	56.2	*
1-4 Years..........	3.6	2.1	5.1	3.5	*	5.3	*	*	*
5-9 Years..........	0.5	*	*	*	*	*	*	*	*
10-14 Years........	0.9	1.3	*	*	*	*	3.5	*	*
15-19 Years........	1.2	1.3	1.1	1.1	1.3	1.0	*	*	*
20-24 Years........	1.9	2.1	1.8	1.7	1.9	1.5	*	*	*
25-29 Years........	3.7	5.3	2.4	2.8	4.2	1.7	9.2	*	*
30-34 Years........	2.0	2.6	1.5	1.2	2.0	*	8.2	*	*
35-39 Years........	1.9	2.3	*	1.4	2.2	*	*	*	*
40-44 Years........	5.5	3.8	7.5	5.5	3.2	8.1	*	*	*
45-49 Years........	8.0	8.7	7.4	5.3	5.4	5.3	27.8	32.6	22.8
50-54 Years........	9.5	8.8	10.1	7.7	7.8	7.6	23.0	16.7	29.0
55-59 Years........	14.2	21.0	7.9	13.4	19.3	8.0	20.6	35.0	*
60-64 Years........	29.9	39.9	20.8	29.4	37.7	21.7	34.1	57.1	*
65-69 Years........	50.8	66.0	37.5	50.9	65.6	38.1	50.4	69.2	32.7
70-74 Years........	103.4	149.1	68.1	103.4	151.2	67.1	103.6	133.1	77.0
75-79 Years........	152.8	197.5	123.0	155.5	200.9	125.4	122.1	160.5	93.4
80-84 Years........	251.3	322.5	204.6	262.5	342.9	210.3	113.6	*	131.4
85 and Over........	659.5	702.0	634.8	686.7	729.7	662.3	386.7	457.2	337.9
Age-Adjusted Rate [1]	13.4	16.6	10.9	13.0	16.0	10.7	15.5	19.2	12.2

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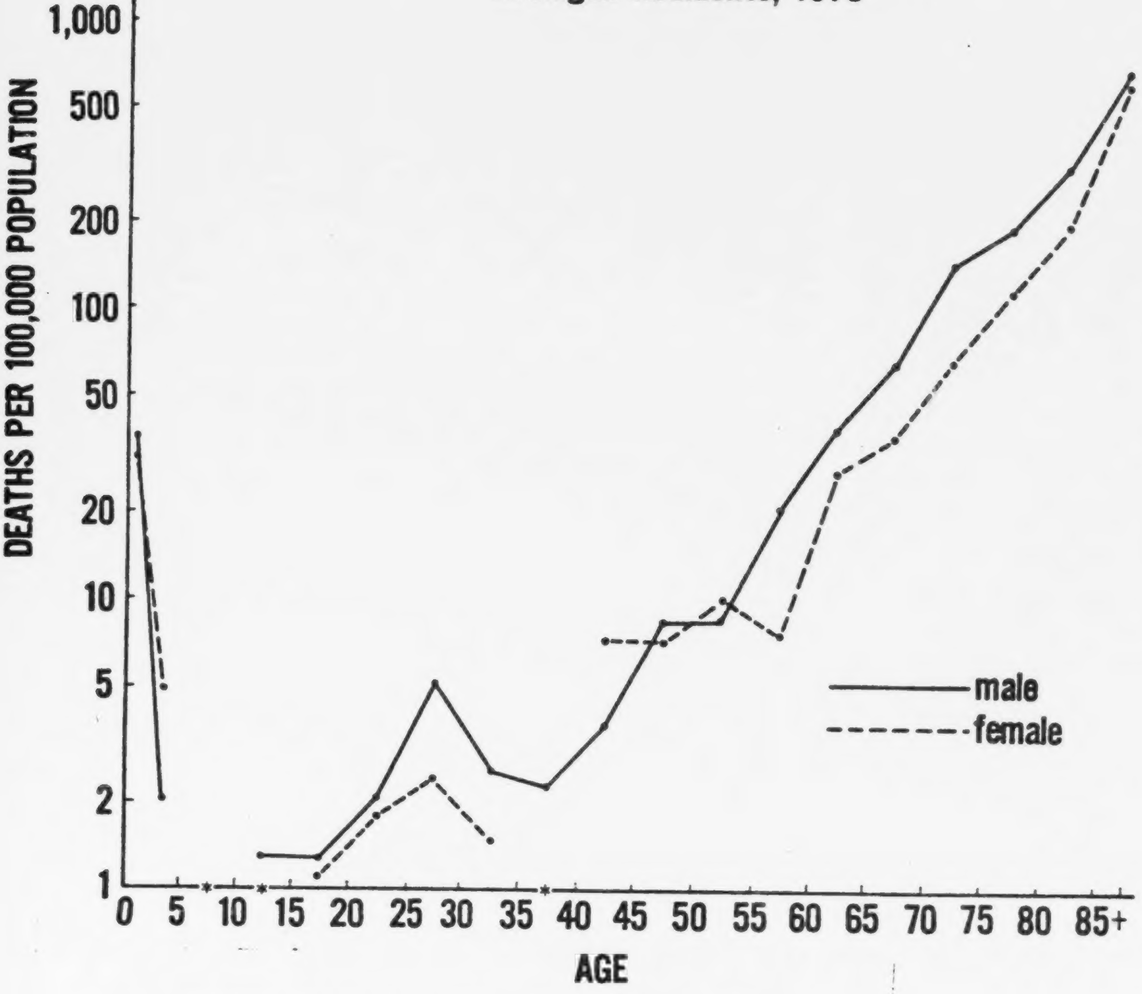
[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

Figure 2.26 Age-Specific Influenza and Pnuemonia Death Rates[1] by Sex
Michigan Residents, 1978



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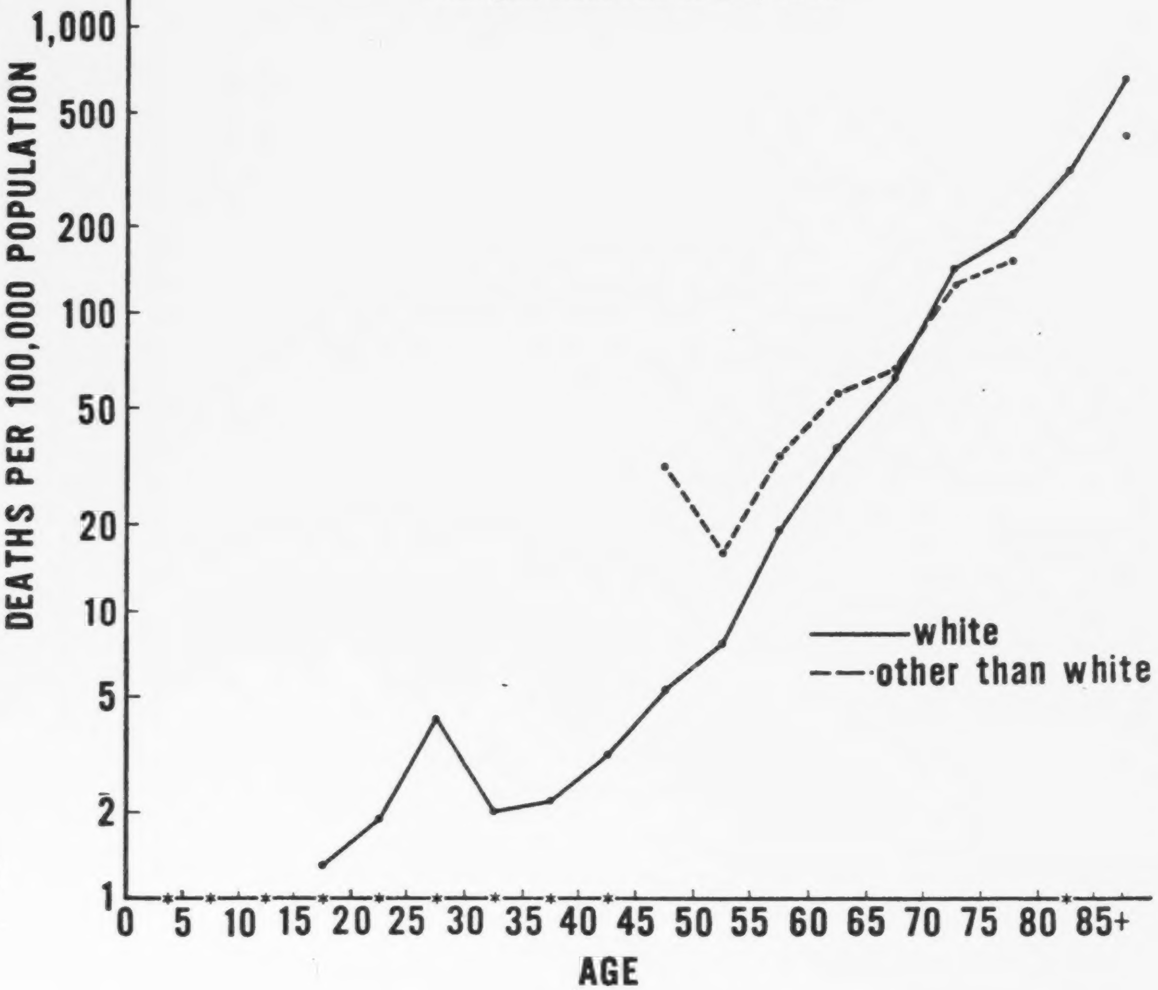
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

The crude rates given in Table 2.30 indicate that a greater proportion of the white population died of influenza and pneumonia in 1978 than was the case for the other than white population. On an age-adjusted basis, however, the rate for the other than white group was above that for the white group. Age-specific data indicate that the rate for the other than white population was higher from birth to age 65. From age 55 through age 74 the rates for the two groups were almost identical. For ages 75 and above, influenza and pneumonia death rates were higher for white persons (Figures 2.27 and 2.28).

Influenza and pneumonia death rates generally declined since 1900 both nationally and in Michigan (Figure 2.29). The annual rate was quite erratic from 1900 through 1940 or 1945. Since that time, the rate has been stable in terms of year to year variation. Michigan's rate of death due to this cause has been below the national rate almost without exception throughout this century. In 1900, the rate in Michigan was 120.3 while the national statistic was 202.1. The peak year for both was 1918 when the rates for the United States and Michigan were 588.5 and 399.8, respectively. Century low rates of 18.2 for Michigan and 23.7 for the nation were recorded in 1977. Michigan's rate of 21.8 in 1978 remained below the estimated U.S. rate of 26.7.

Michigan's age-adjusted rates for influenza and pneumonia have generally been below those for the nation during the 1970's (Table 2.31). Rates for other than white persons declined more rapidly than rates for white perons. The decline was most dramatic for other than white males for whom the age-adjusted rate dropped from 48.3 in 1970 to 19.2 in 1978. The smallest decline was observed in the rate for white females, where the rates decreased from 12.3 in 1970 to 10.7 in 1978.

Figure 2.27 Age-Specific Influenza and Pnuemonia Death Rates[1] by Race
Michigan Resident Males, 1978



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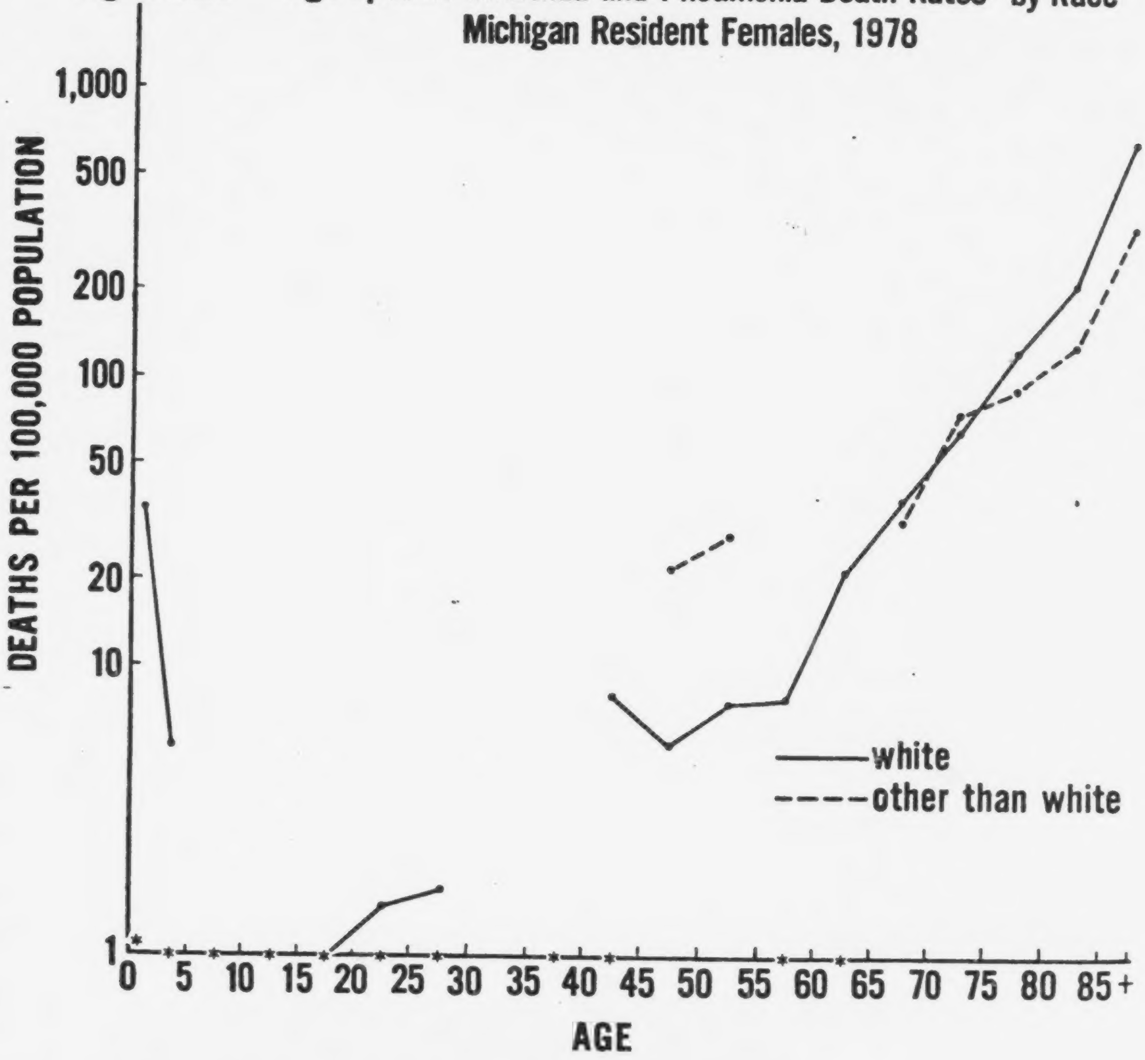
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.28 Age-Specific Influenza and Pneumonia Death Rates[1] by Race
Michigan Resident Females, 1978



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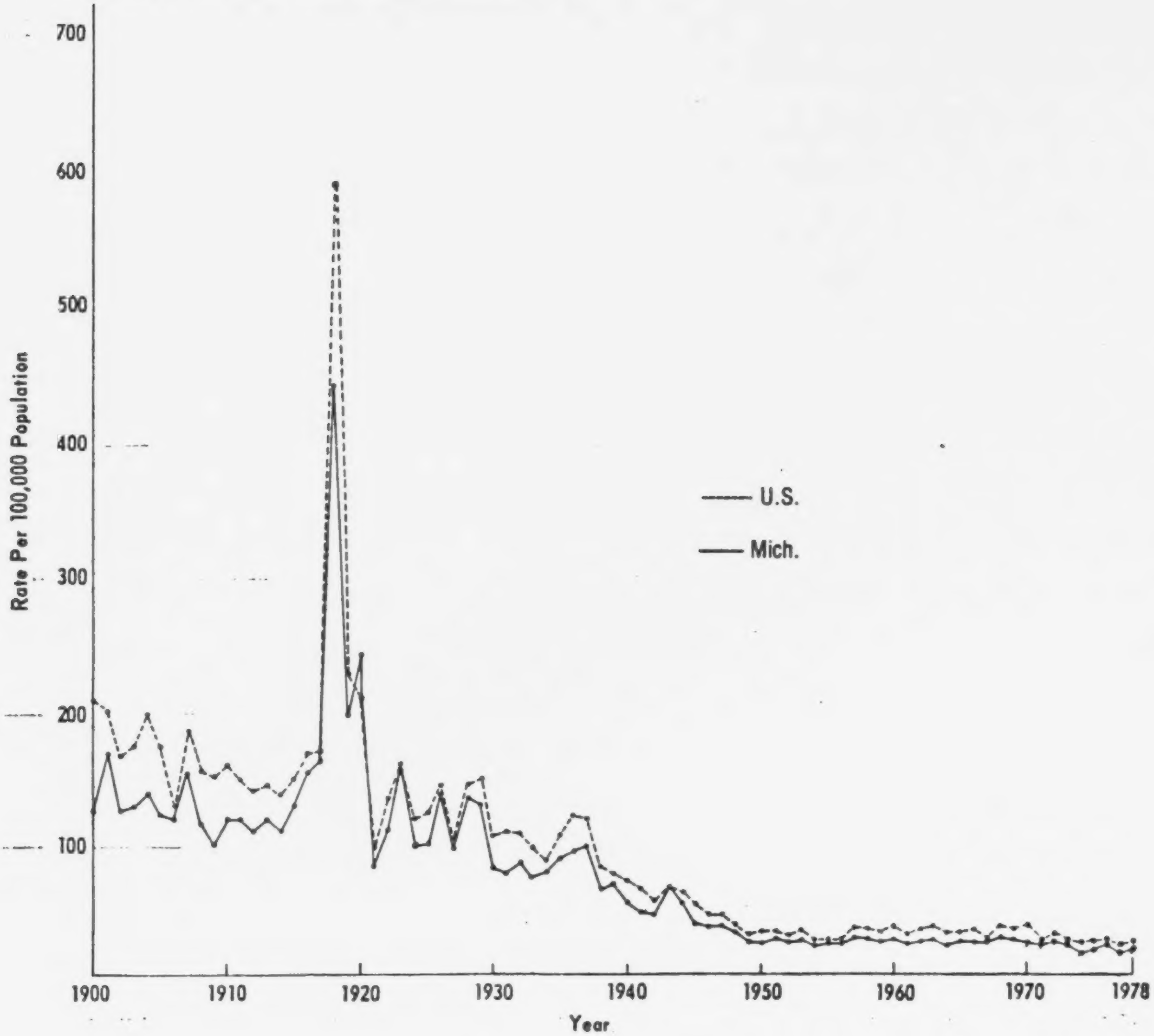
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

FIGURE 2.29—Influenza and Pneumonia Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1]National rates are from death registration states for 1900-1932 and the United States for 1933-1978, U. S. rate for 1978 is provisional.

[2]Influenza and pneumonia death rates since 1900 are suitable for general comparison over time but detailed study (such as time series) requires special consideration. See Technical Notes.

TABLE 2.31

Age-Adjusted Influenza and Pneumonia Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	19.1	24.7	14.5	16.6	21.8	12.3	38.9	48.3	30.8
	1971	17.6	23.8	12.6	15.3	20.5	11.2	35.9	50.2	23.1
	1972	18.7	25.6	13.0	16.8	23.0	11.8	33.2	47.0	21.0
	1973	17.1	21.7	13.3	15.0	19.2	11.6	34.2	42.6	26.9
	1974	13.1	17.2	10.0	11.9	15.2	9.4	22.8	33.0	13.9
	1975	13.5	17.5	10.4	12.5	16.1	9.8	21.1	27.9	15.0
	1976	14.8	18.7	11.6	13.9	17.5	11.1	21.1	27.7	15.0
	1977	11.7	16.1	8.0	10.9	15.1	7.5	17.3	23.9	11.3
	1978	13.4	16.6	10.9	13.0	16.0	10.7	15.5	19.2	12.2
U.S.	1970	22.1	28.8	16.7	19.8	26.0	15.0	38.1	50.1	27.9
	1971	19.3	24.9	14.8	17.6	22.7	13.6	32.0	43.0	22.8
	1972	20.8	27.6	15.6	19.2	25.4	14.4	32.6	44.5	22.8
	1973	20.1	26.6	15.2	18.5	24.6	14.0	31.4	42.3	22.5
	1974	16.9	22.6	12.8	15.7	21.0	12.0	25.4	35.1	17.5
	1975	16.6	22.5	12.3	15.6	21.0	11.7	23.9	33.5	16.1
	1976	17.4	23.1	13.2	16.3	21.8	12.6	24.4	33.7	17.0
	1977	14.2	19.4	10.4	13.2	18.1	9.8	21.0	29.6	14.0
	1978	15.4 Pr.	---	---	---	---	---	---	---	---

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

Pneumonia unspecified caused 1,237 deaths or 61.8 percent of all Michigan influenza and pneumonia deaths in 1978 (Table 2.32). Another 16.8 percent of the deaths were due to bronchopneumonia unspecified, and 123 deaths were due to pneumococcal pneumonia. The three most frequent types of influenza and pneumonia deaths together accounted for 84.7 percent of all such deaths. Influenza was directly involved in 8.7 percent of all influenza and pneumonia deaths in 1978, compared to 1.3 percent in 1977 and 14.0 percent in 1976.

Although the general trend in the frequency of influenza and pneumonia deaths has been downward, the number of pneumonia unspecified deaths in 1978 was higher than for any of the ten previous years (Table 2.33). On the other hand, the number of deaths due to bronchopneumonia unspecified and pneumococcal pneumonia each fell by more than 50 percent between 1968 and 1978.

The likelihood of eventual death being caused by influenza and pneumonia is a stable 0.030 for females and between 0.028 and 0.029 for males from birth to age 55. The calculated probabilities for each sex slowly increase after this age, with probabilities for males increasing more rapidly than those for females. Based on the Michigan mortality experience of 1976-1978, by age 85 the chances of eventually dying from influenza and pneumonia are 0.049 for males and 0.042 for females (Figure 2.30).

TABLE 2.32 - Deaths Due to Influenza and Pneumonia by Detailed Cause Michigan Residents, 1978

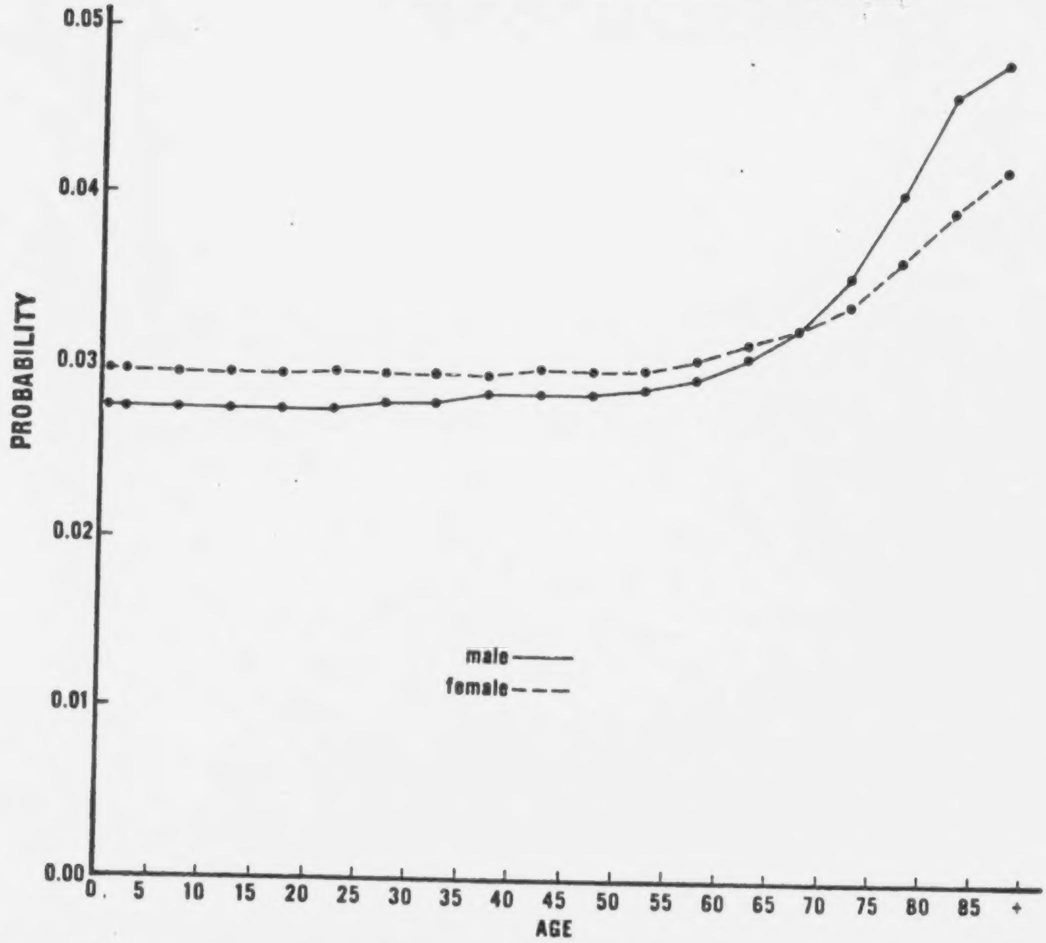
ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENT
486	Pneumonia Unspecified	1,237	61.8
485	Bronchopneumonia Unspecified	336	16.8
481	Pneumococcal Pneumonia	123	6.1
470	Influenza Unqualified	82	4.1
471	Influenza with Pneumonia	79	3.9
482	Other Bacterial Pneumonia	54	2.7
480	Viral Pneumonia	49	2.4
484	Acute Interstitial Pneumonia	23	1.1
472	Influenza with Other Respiratory Manifestations	8	0.4
483	Pneumonia Due to Other Specified Organisms	6	0.3
473	Influenza with Digestive Manifestations	3	0.1
474	Influenza with Nervous Manifestations	3	0.1
	TOTAL	2,003	99.8

TABLE 2.33 - Deaths Due to Influenza and Pneumonia by Detailed Cause, Michigan Residents, 1968 - 1978

Year	Total[1]	Pneumonia Unspecified	Bronchopneumonia Unspecified	Pneumococcal Pneumonia	Influenza Unqualified	Influenza With Pneumonia	Other Bacterial Pneumonia	Viral Pneumonia
1968	2,577	1,104	795	258	76	146	44	89
1969	2,439	1,139	682	199	60	137	50	82
1970	2,101	1,018	678	145	32	52	48	71
1971	2,058	1,042	646	169	30	39	45	44
1972	2,201	1,084	645	150	70	116	43	55
1973	2,090	1,154	541	120	61	62	57	43
1974	1,698	988	419	137	30	27	49	29
1975	1,825	1,047	397	138	53	71	44	44
1976	2,106	1,165	361	136	103	181	56	61
1977	1,660	1,096	343	113	8	9	32	34
1978	2,003	1,237	336	123	82	79	54	49

[1] Rows do not add to total as other influenza and pneumonia categories are included in total.

FIGURE 2.30 Probability of Eventually Dying from Influenza and Pneaumonia by Age and Sex, Michigan Residents 1975-1978[1]



[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Diabetes Mellitus

In 1978, diabetes mellitus caused the death of 1,551 Michigan residents. Deaths to females numbered 912 or 59 percent of all diabetes mellitus deaths. There were 639 deaths to males in 1978.

The median age at death for persons dying from diabetes mellitus was 74 years (Table 2.34). This is three years above the median age of all deaths. Males dying from this disease had a median age of 70 years whereas the median for females was 76 years. The median for white males was 71 years compared to 77 for white females. For other than white males the median was 66 years and that for other than white females 70 years.

Diabetes mellitus death rates by age, race, and sex are presented in Table 2.35. The diabetes mellitus crude death rate was 16.9 in 1978. The crude rate for females was 19.5, about 38 percent higher than the rate of 14.1 for males. When age-adjusted rates are examined, however, this differential in rates by sex practically disappears. The age-adjusted rate of 11.7 for females is similar to that of males (11.5).

Age-specific mortality rates for males and females in Table 2.35 are graphically displayed in Figure 2.31. Rates for both sexes were below 10 per 100,000 to age 50, and the differences between the rates were generally small. Between ages 50 and 59 the rate for males was substantially above that for females. From age 60 to age 75, the rate for males was slightly higher in two age groups but 18 percent below the rate for females in one age group. At ages above 74 years, the rate for females was higher than for males.

TABLE 2.34 - Deaths Due to Diabetes Mellitus by Age, Race, and Sex
Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year	-	-	-	-	-	-	-	-	-	-	-	-
1-4 Years	-	-	-	-	-	-	-	-	-	-	-	-
5-9 Years	-	-	-	-	-	-	-	-	-	-	-	-
10-14 Years	1	-	1	1	-	1	-	-	-	-	-	-
15-19 Years	4	1	3	2	1	1	2	-	2	-	-	-
20-24 Years	2	2	-	2	2	-	-	-	-	-	-	-
25-29 Years	13	7	6	9	7	2	4	-	4	-	-	-
30-34 Years	15	9	6	12	8	4	3	1	2	-	-	-
35-39 Years	19	7	12	15	5	10	4	2	2	-	-	-
40-44 Years	16	9	7	8	7	1	8	2	6	-	-	-
45-49 Years	38	19	19	27	13	14	11	6	5	-	-	-
50-54 Years	75	48	27	65	43	22	9	4	5	1	1	-
55-59 Years	100	59	41	80	49	31	20	10	10	-	-	-
60-64 Years	144	72	72	108	58	50	36	14	22	-	-	-
65-69 Years	172	72	100	140	58	82	31	14	17	1	-	1
70-74 Years	224	98	126	183	86	97	41	12	29	-	-	-
75-79 Years	249	90	159	213	81	132	36	9	27	-	-	-
80-84 Years	226	80	146	206	72	134	20	8	12	-	-	-
85-89 Years	168	44	124	159	41	118	9	3	6	-	-	-
90 and Over	85	22	63	79	22	57	4	-	4	2	-	2
All Ages	1,551	639	912	1,309	553	756	238	85	153	4	1	3
Median Age at Last Birthday	74	70	76	75	71	77	68	66	70	*	*	*

TABLE 2.35 - Diabetes Mellitus Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	16.9	14.1	19.5	16.5	14.1	18.8	19.2	14.1	24.0
Under 1 Year.......	*	*	*	*	*	*	*	*	*
1-4 Years..........	*	*	*	*	*	*	*	*	*
5-9 Years..........	*	*	*	*	*	*	*	*	*
10-14 Years........	*	*	*	*	*	*	*	*	*
15-19 Years........	*	*	*	*	*	*	*	*	*
20-24 Years........	*	*	*	*	*	*	*	*	*
25-29 Years........	2.3	2.9	1.8	1.8	3.3	*	*	*	*
30-34 Years........	2.2	2.6	1.8	2.0	2.6	*	*	*	*
35-39 Years........	3.3	2.3	4.6	3.0	1.8	4.5	*	*	*
40-44 Years........	4.0	4.3	3.7	2.3	3.8	*	15.7	*	23.4
45-49 Years........	8.5	8.2	8.8	6.9	6.4	7.4	20.4	21.7	19.0
50-54 Years........	14.2	18.4	10.1	14.1	19.1	9.3	14.8	*	16.1
55-59 Years........	20.6	25.3	16.2	18.5	23.6	13.8	37.5	38.9	36.3
60-64 Years........	36.2	37.8	34.8	30.5	34.2	27.1	81.9	66.6	95.9
65-69 Years........	58.3	52.2	63.5	53.9	48.1	59.0	89.6	80.7	98.0
70-74 Years........	106.2	106.7	105.9	97.0	105.7	90.4	184.6	114.1	248.1
75-79 Years........	149.2	134.7	159.0	138.5	132.3	142.7	274.8	160.5	360.4
80-84 Years........	161.3	144.1	172.6	159.1	141.1	170.7	189.3	178.7	197.1
85 and Over........	287.2	204.1	335.3	299.7	216.8	346.8	162.2	*	211.2
Age-Adjusted Rate [1]	11.7	11.5	11.7	10.7	11.1	10.2	19.9	15.0	23.9

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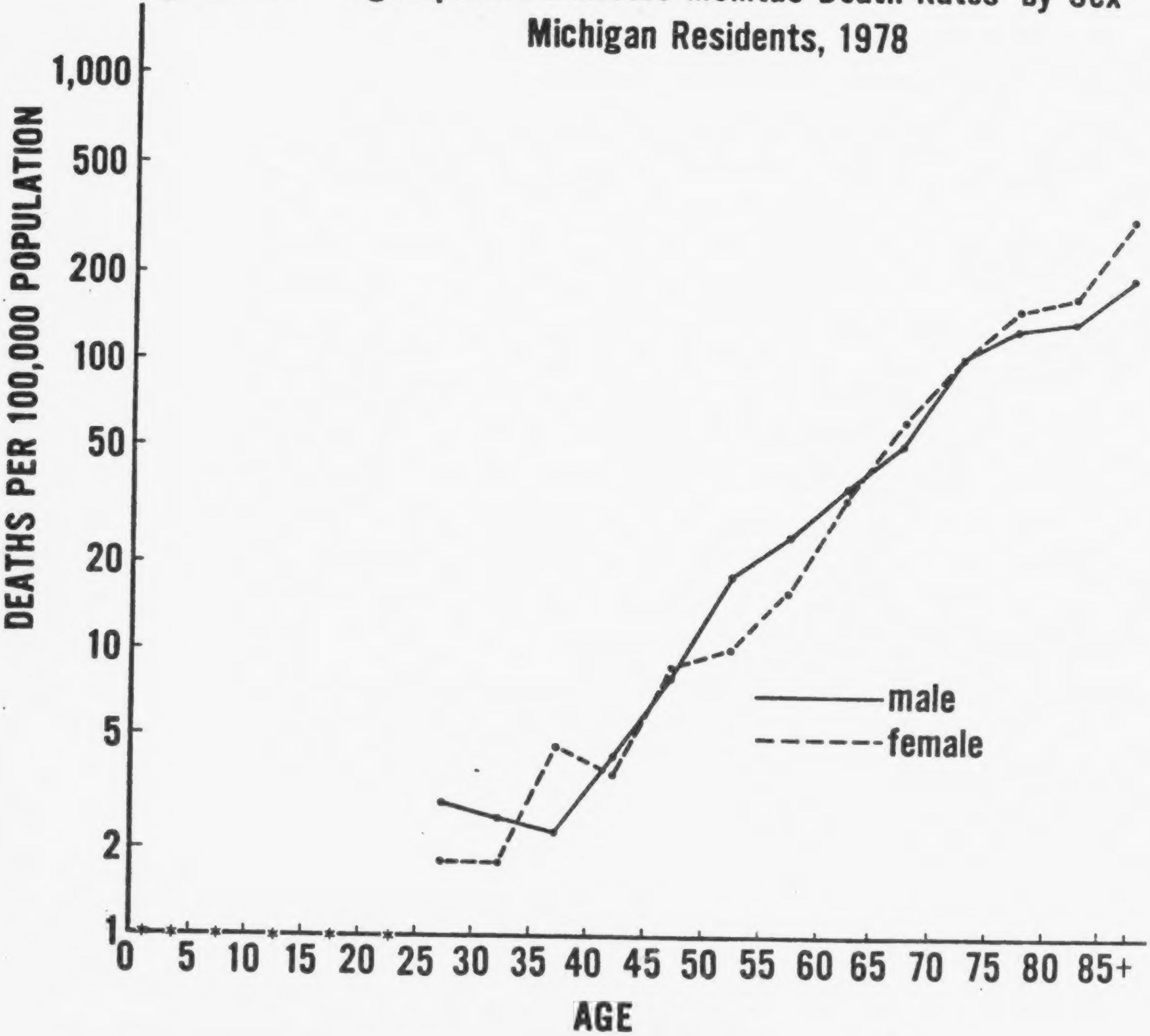
[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

Figure 2.31 Age-Specific Diabetes Mellitus Death Rates[1] by Sex
Michigan Residents, 1978



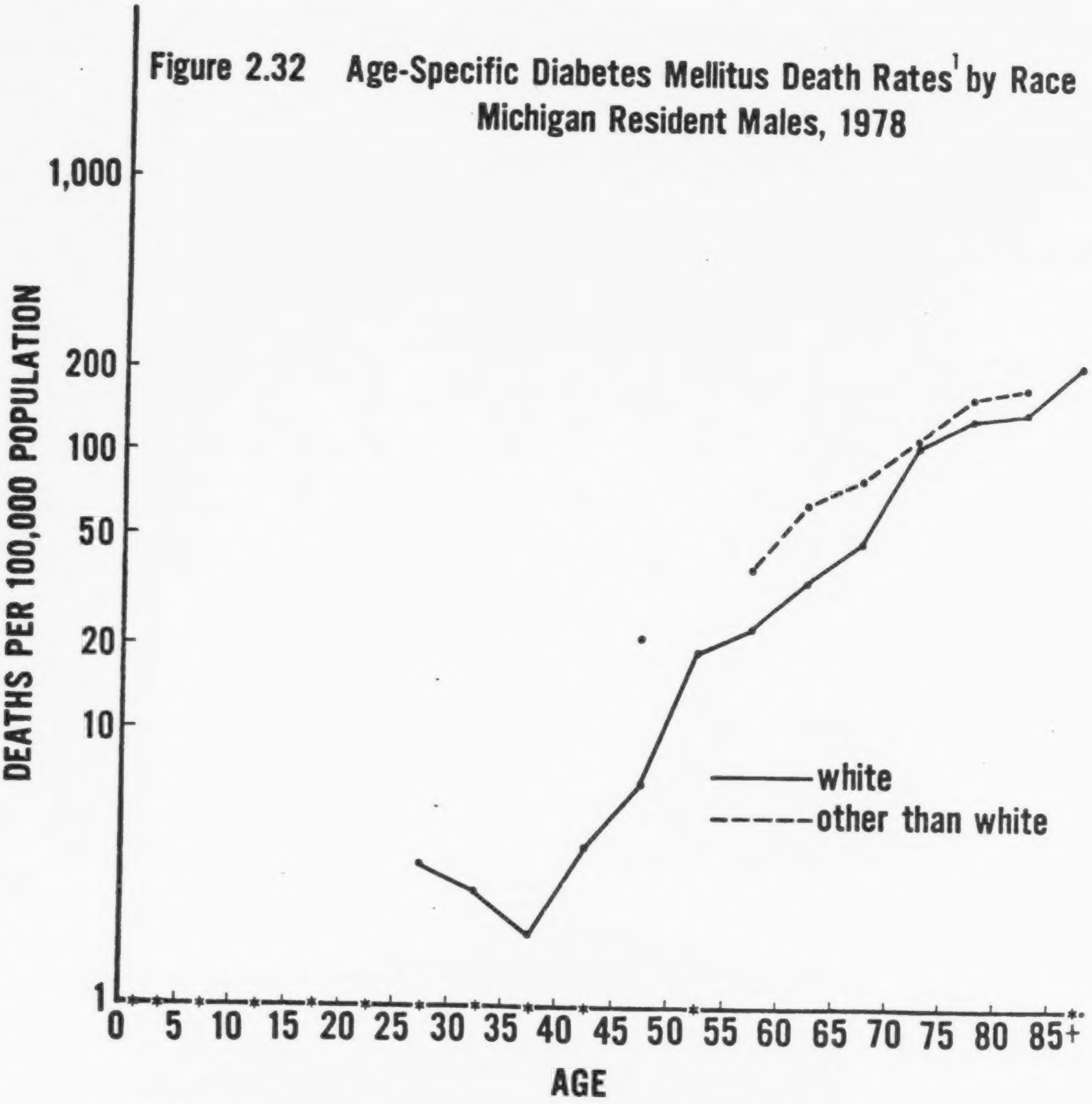
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Crude diabetes mellitus death rates were the same for white and other than white males (14.1). The crude rate of 24.0 for other than white females was 27.7 percent above that for white females. When the differing age distributions of the populations are taken into account, the elevation of the rate for other than white females becomes even more marked. The age-adjusted rate for other than white females was 134.3 percent higher than the comparable rate for white females. The age-adjusted rate for other than white males was 35.1 percent higher than that for white males.

Age-specific rates for other than white persons were higher than for white persons in all age groups below age 85 with a sufficient number of events to calculate rates. Rates for other than white females were between 1.6 and 3.5 times thosefor white females from age 45 to age 80. Rates for other than white males were also higher than those for their white counterparts, although the differences were not generally as substantial as those for females (Figures 2.32 and 2.33).

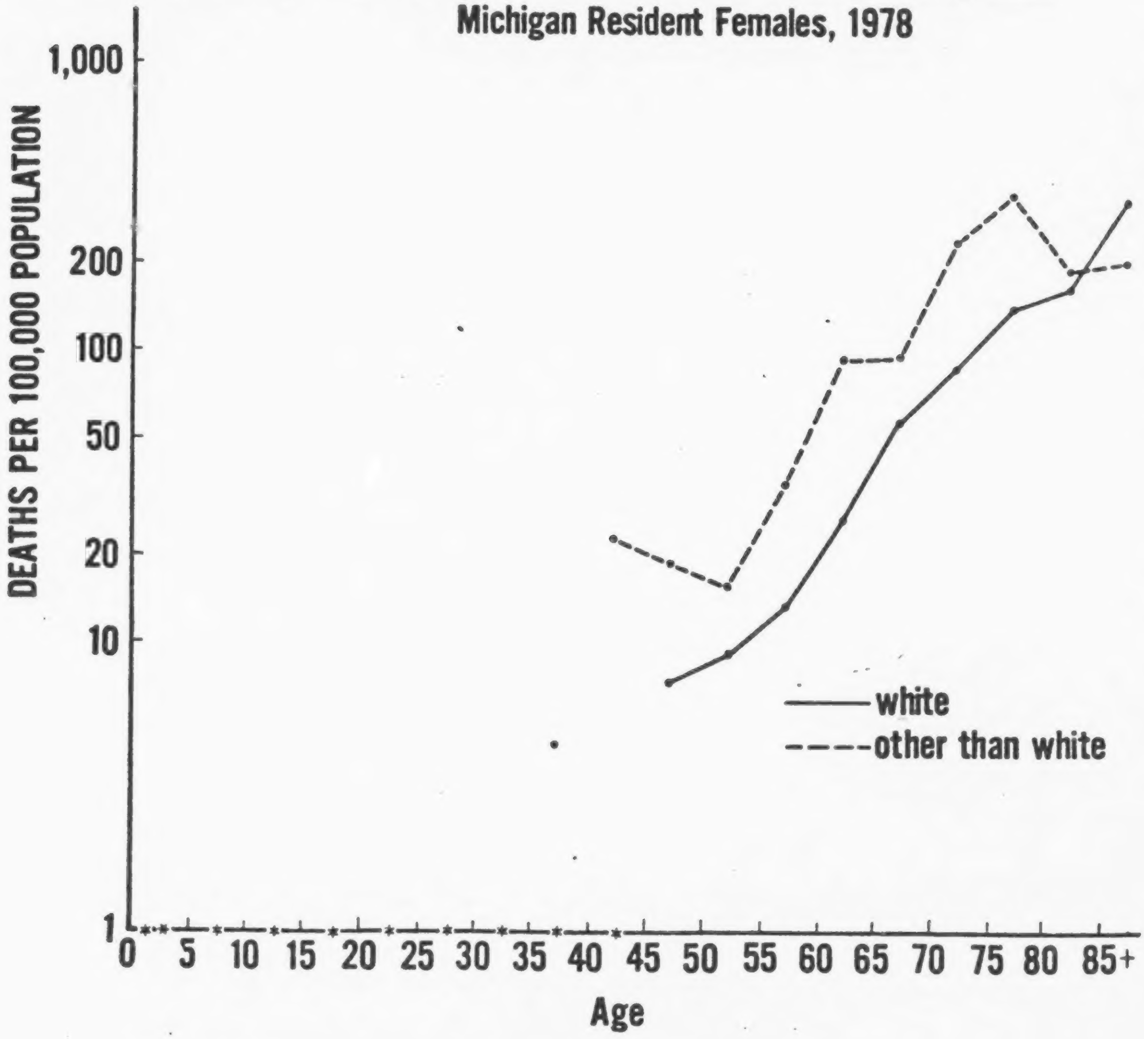
Diabetes mellitus death rates in Michigan rose steadily from a low of 9.3 in 1900 to a peak of 29.7 in 1949 (Figure 2.34). Adoption of the 6th revision of the International Classification of Diseases in 1950 caused a significant change in Michigan diabetes death rates. From 22.6 in 1950 the rate dipped somewhat then rose to a peak of 27.0 in 1966. Since then the rate has declined 37 percent to 16.9. This is the lowest rate since the 6th revision of the ICD was adopted in 1950. The national ranges in the first half of this century were from 11.0 in 1900 to 18.3 in 1948 (the year of the adoption of the 6th revision nationally was 1949). The rate for the nation since 1949, though more stable than Michigan's rate, has tended to follow the same pattern. A peak of 19.2 was reached in 1968. Since that time the rate for the nation has declined by 22 percent to a provisional 15.0 in 1978. This is also a record low for the United States since 1948.

Figure 2.32 Age-Specific Diabetes Mellitus Death Rates[1] by Race
Michigan Resident Males, 1978



[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.33 Age-Specific Diabetes Mellitus Death Rates[1] by Race
Michigan Resident Females, 1978



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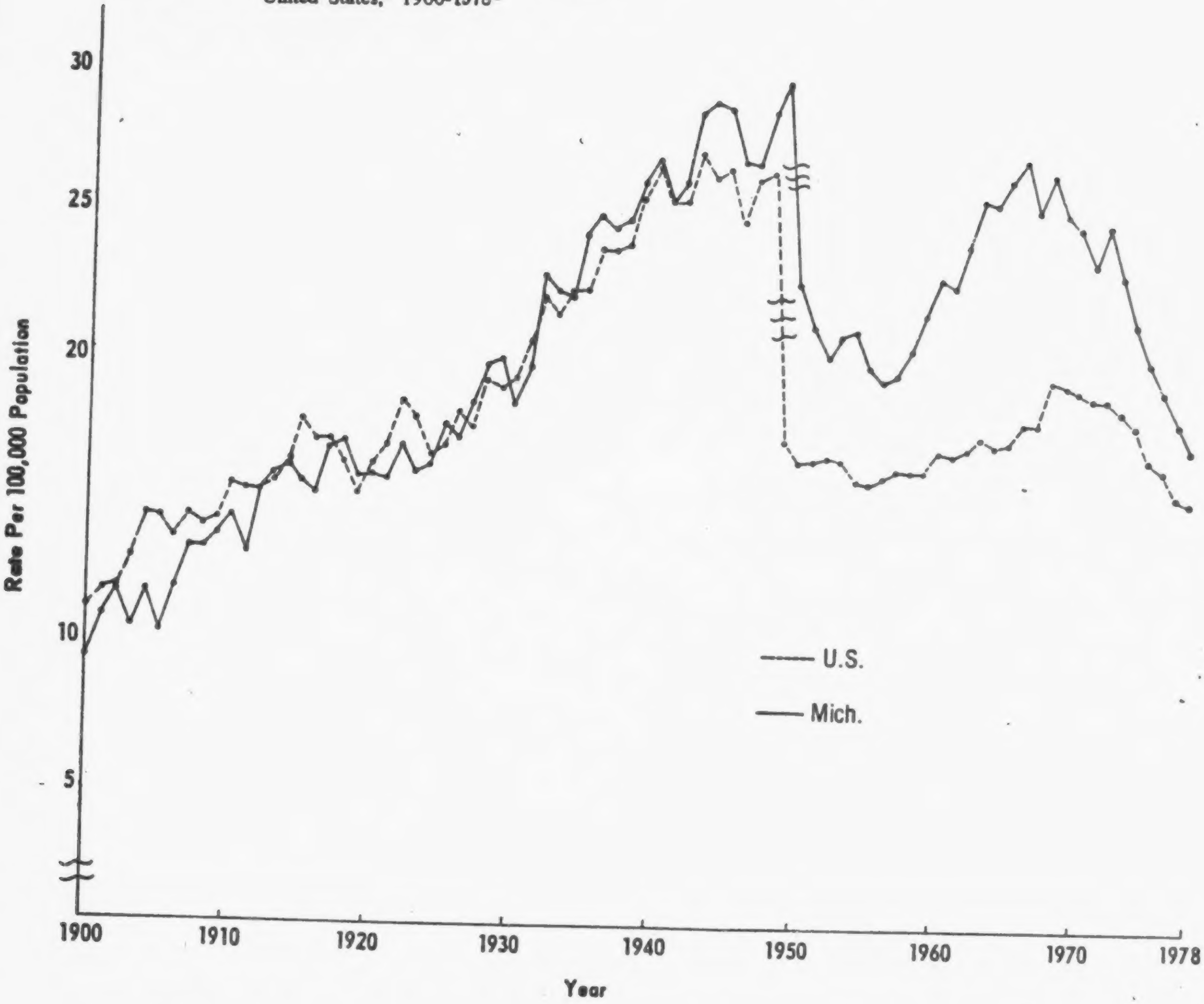
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

FIGURE 2.34—Diabetes Mellitus Death Rates, Michigan and United States,[1] 1900-1978[2]



[1] National rates are from death registration states for 1900-1932 and the United States for 1933-1978; U. S. rate for 1978 is provisional.

[2] The comparability of diabetes mellitus death rates from the 5th revision of the ICDA coding procedures with those of the 6th revision is considered weak. The comparability ratio is estimated to be .55. The 6th revision was adopted in 1949 for national cause-of-death statistics and in 1950 for Michigan statistics. The comparability of diabetes mellitus disease death rates through the 6th, 7th, and 8th revisions (1949 to date nationally and 1950 to date in Michigan) is high. General comparison before and after these dates of adoption can be made but detailed study requires special consideration. See Technical Notes.

The diabetes mellitus death rate for the nation was generally above Michigan's rate for the first 25 or so years in this century. Since 1942, Michigan's rate has been above that of the nation. Through the 1960's the differential between the rates for Michigan and the Untied States was quite large. This has only recently started to dimish. In 1978 Michigan's rate (16.9) was 13 percent above the provisional estimate of 15.0 for the United States.

Age-adjusted death rates for diabetes mellitus in the 1970's are presented in Table 2.36. These rates have generally declined both in Michigan and the United States for all population groups. In Michigan, rates for other than white persons experienced a greater absolute and relative decline than those for white persons. Rates for other than white persons, however, remained substantially above comparable rates for white persons in 1978. The declines in the rates for other than white persons were much greater in Michigan than those observed for this group nationally. Michigan's rates for other than white persons were substantially higher than comparable rates for the nation in 1970, but are about the same as those for the nation since 1974. Age-adjusted rates for white persons in Michigan also declined more sharply than comparable rates for the nation. However, they remained higher than those of the nation throughout the period.

TABLE 2.36

Age-Adjusted Diabetes Mellitus Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970 - 1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	20.1	20.8	19.6	18.6	19.9	17.6	34.4	29.2	39.5
	1971	18.8	17.3	19.9	17.4	16.5	17.9	31.2	23.7	38.0
	1972	19.6	18.7	20.2	18.1	17.7	18.4	32.0	27.1	36.6
	1973	17.9	17.2	18.2	16.7	16.2	16.8	28.2	25.0	30.9
	1974	16.0	15.6	16.2	15.5	15.4	15.5	19.7	16.9	22.2
	1975	14.6	14.2	14.7	13.8	13.7	13.8	20.6	18.6	22.3
	1976	13.3	13.0	13.4	12.2	12.0	12.3	21.9	21.0	22.8
	1977	12.5	12.6	12.2	11.7	12.0	11.3	18.8	17.2	20.1
	1978	11.7	11.5	11.7	10.7	11.1	10.2	19.9	15.0	23.9
U.S.	1970	14.1	13.5	14.4	12.9	12.7	12.8	25.2	20.4	29.3
	1971	13.8	13.2	14.2	12.4	12.4	12.4	27.5	21.7	32.4
	1972	13.6	13.2	13.9	12.2	12.3	12.1	26.0	21.2	30.1
	1973	13.2	12.9	13.3	11.8	12.0	11.6	25.3	21.1	28.6
	1974	12.5	12.2	12.7	11.4	11.5	11.2	23.4	18.8	27.1
	1975	11.6	11.4	11.6	10.4	10.7	10.2	21.7	17.9	24.6
	1976	11.1	10.9	11.1	10.0	10.2	9.7	21.0	17.5	23.7
	1977	10.4	10.5	10.3	9.4	9.8	9.0	19.5	16.3	22.0
	1978	10.1Pr	---	---	---	---	---	---	---	---

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

In 1978 91.6 percent of all diabetes mellitus deaths did not involve acidosis or coma. There were 131 deaths in 1978 where acidosis or coma was mentioned with the disease. These are deaths where a diabetic crisis was involved (Table 2.37).

The 33 percent decline over the last decade in diabetes deaths is largely the result of a 34 percent decline in the number of deaths without mention of acidosis or coma. Deaths with mention of acidosis or coma constituted 6.8 percent of all diabetes deaths in 1968 and 8.4 percent ofall such deaths in 1978 (Table 2.37).

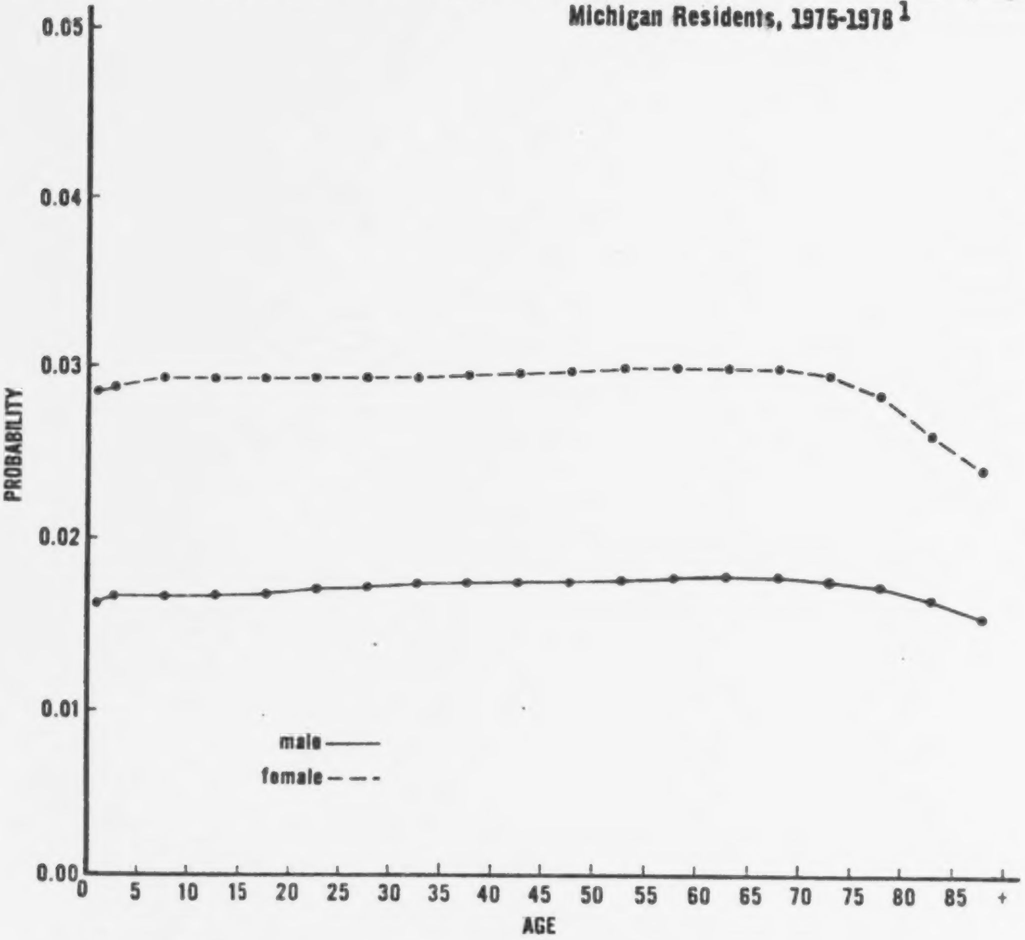
At birth, the probability of eventual death due to diabetes mellitus is 0.017 for males and 0.029 for females (Figure 2.35). The probability of death from diabetes mellitus gradually increases from birth to age 65 for both sexes. Beyond this age persons of both sexes face a decreasing probability of dying from diabetes mellitus. Both males and females are less likely to eventually die from this cause at ages 85 and over than when they were born. Based on mortality data from Michigan for the years 1976 through 1978 the probabilities for females are above those for males throughout life.

TABLE 2.37

Deaths Due to Diabetes Mellitus by Mention of Acidosis or Coma, Michigan Residents, 1968 - 1978

Year	Total	Without Mention of Acidosis or Coma	With Mention of Acidosis or Coma
1968	2,298	2,142	156
1969	2,188	2,010	178
1970	2,180	2,037	143
1971	2,103	1,948	155
1972	2,222	2,067	155
1973	2,074	1,889	185
1974	1,940	1,776	164
1975	1,819	1,676	143
1976	1,719	1,579	140
1977	1,615	1,457	158
1978	1,551	1,420	131

FIGURE 2.35 Probability of Eventually Dying from Diabetes Mellitus by Age and Sex, Michigan Residents, 1975-1978[1]



[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Cirrhosis of the Liver

The 7th leading cause of Michigan resident deaths in 1978 was cirrhosis of the liver. This disease caused 1,351 deaths. There were 883 deaths to males and 468 deaths to females due to cirrhosis of the liver in 1978.

The median age at death (57 years) due to cirrhosis of the liver was 14 years below that from all causes (Table 2.38). The median age at death for white males and females was 59 years. For other than white males and females the median age at death was 51 and 52 years, respectively.

Death rates for cirrhosis of the liver by age, race, and sex are presented in Table 2.39. In 1978 both crude and age-adjusted rates for males were about twice those for females. Age-specific rates were higher for males than for females in all age groups, as graphically displayed in Figure 2.36. Relative increases in the age-specific mortality rate were about the same for both sexes. The mortality rate for both sexes declined in the last few age groups.

Crude mortality rates due to cirrhosis of the liver deaths for other than white persons were nearly twice those for white persons. Age-adjusted rates for the other than white groups were about two and one-half times the rates for the comparable white groups. Age-specific rates for other than white males and females were generally much higher than those for white persons. These differences were greatest between ages 25 and 44 (Figures 2.37 and 2.38).

TABLE 2.38 - Deaths Due to Cirrhosis of the Liver by Age, Race, and Sex,

Michigan Residents, 1978

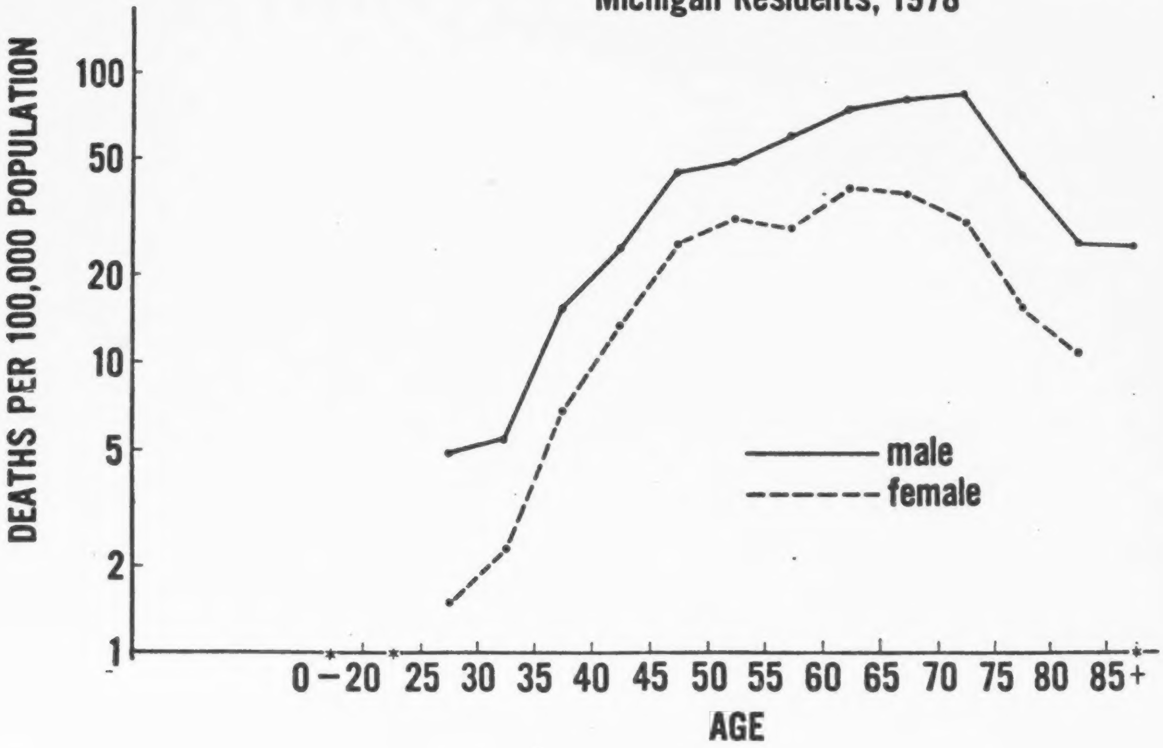
AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	-	-	-	-	-	-	-	-	-	-	-	-
1-4 Years........	-	-	-	-	-	-	-	-	-	-	-	-
5-9 Years........	-	-	-	-	-	-	-	-	-	-	-	-
10-14 Years......	1	1	-	-	-	-	1	1	-	-	-	-
15-19 Years......	1	1	-	1	1	-	-	-	-	-	-	-
20-24 Years......	4	4	-	3	3	-	1	1	-	-	-	-
25-29 Years......	17	12	5	10	7	3	6	4	2	1	1	-
30-34 Years......	27	19	8	14	10	4	13	9	4	-	-	-
35-39 Years......	65	47	18	37	30	7	27	17	10	1	-	1
40-44 Years......	77	52	25	41	26	15	36	26	10	-	-	-
45-49 Years......	157	102	55	107	70	37	49	31	18	1	1	-
50-54 Years......	208	125	83	157	97	60	51	28	23	-	-	-
55-59 Years......	213	141	72	167	112	55	45	28	17	1	1	-
60-64 Years......	222	141	81	179	115	64	43	26	17	-	-	-
65-69 Years......	170	111	59	148	94	54	22	17	5	-	-	-
70-74 Years......	111	76	35	105	72	33	6	4	2	-	-	-
75-79 Years......	44	29	15	41	26	15	3	3	-	-	-	-
80-84 Years......	23	14	9	22	14	8	1	-	1	-	-	-
85-89 Years......	10	7	3	9	6	3	1	1	-	-	-	-
90 and Over......	1	1	-	1	1	-	-	-	-	-	-	-
All Ages	1,351	883	468	1,042	684	358	305	196	109	4	3	1
Median Age at Last Birthday	57	57	57	59	59	59	51	51	52	*	*	*

TABLE 2.39 - Cirrhosis of the Liver Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	14.7	19.5	10.0	13.2	17.5	8.9	24.6	32.6	17.0
0-19 Years........	*	*	*	*	*	*	*	*	*
20-24 Years........	*	*	*	*	*	*	*	*	*
25-29 Years........	3.0	4.9	1.5	2.0	3.3	*	9.2	*	*
30-34 Years........	3.9	5.5	2.3	2.3	3.3	*	15.2	23.0	8.6
35-39 Years........	11.5	15.3	6.9	7.7	11.1	3.6	36.1	46.4	26.2
40-44 Years........	19.3	24.6	13.4	11.8	14.0	9.3	70.5	102.5	38.9
45-49 Years........	35.1	44.2	25.4	27.5	34.9	19.5	90.7	112.1	68.3
50-54 Years........	39.4	48.0	31.0	33.6	42.1	25.3	83.6	93.6	74.1
55-59 Years........	43.8	60.4	28.5	38.8	54.4	24.4	84.4	108.8	61.6
60-64 Years........	55.8	74.0	39.1	50.6	67.8	34.7	97.8	123.7	74.1
65-69 Years........	57.6	80.5	37.5	57.0	78.0	38.8	61.6	98.0	27.2
70-74 Years........	52.6	82.7	29.4	55.7	88.5	30.8	27.0	*	*
75-79 Years........	25.4	43.4	15.0	26.7	42.5	16.2	*	*	*
80-84 Years........	16.4	25.2	10.6	17.0	27.4	10.2	*	*	*
85 and Over........	12.5	24.7	*	12.5	24.1	*	*	*	*
Age-Adjusted Rate [1]	14.2	19.1	9.6	12.0	16.4	8.0	29.6	39.3	20.5

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

Figure 2.36 Age-Specific Cirrhosis of the Liver Death Rates[1] by Sex, Michigan Residents, 1978



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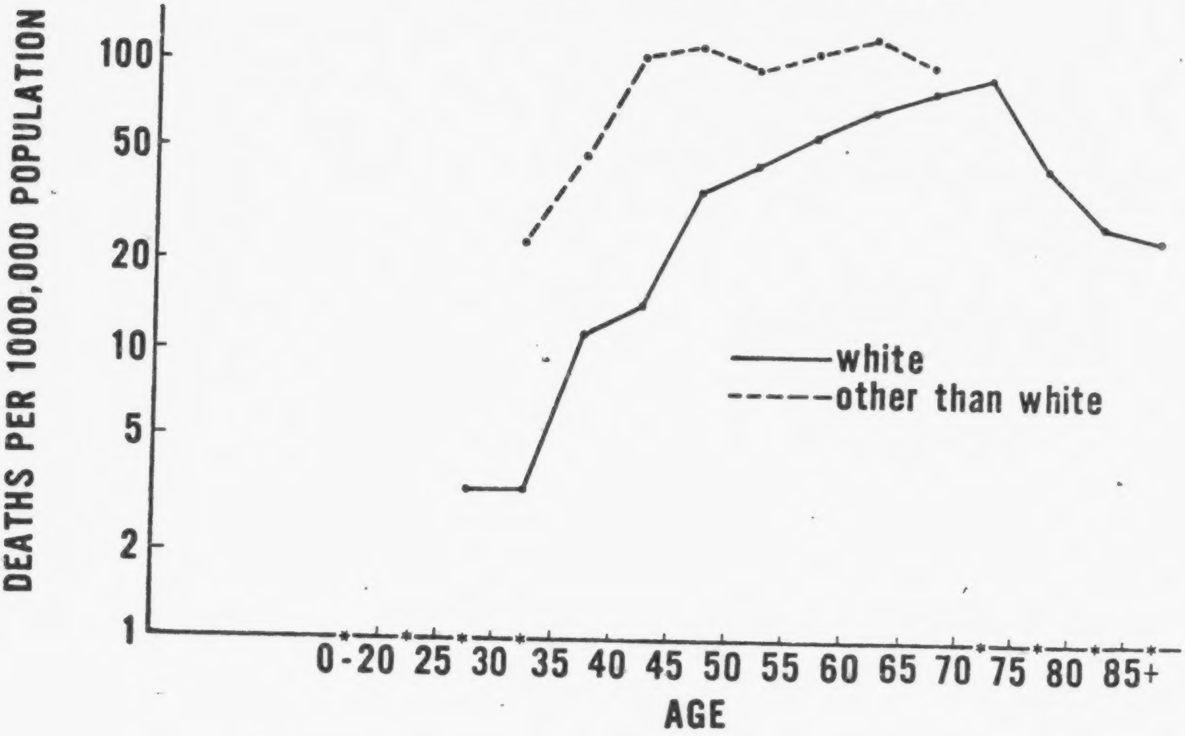
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.37 Age-Specific Cirrhosis of the Liver Death Rates[1] by Race, Michigan Resident Males, 1978



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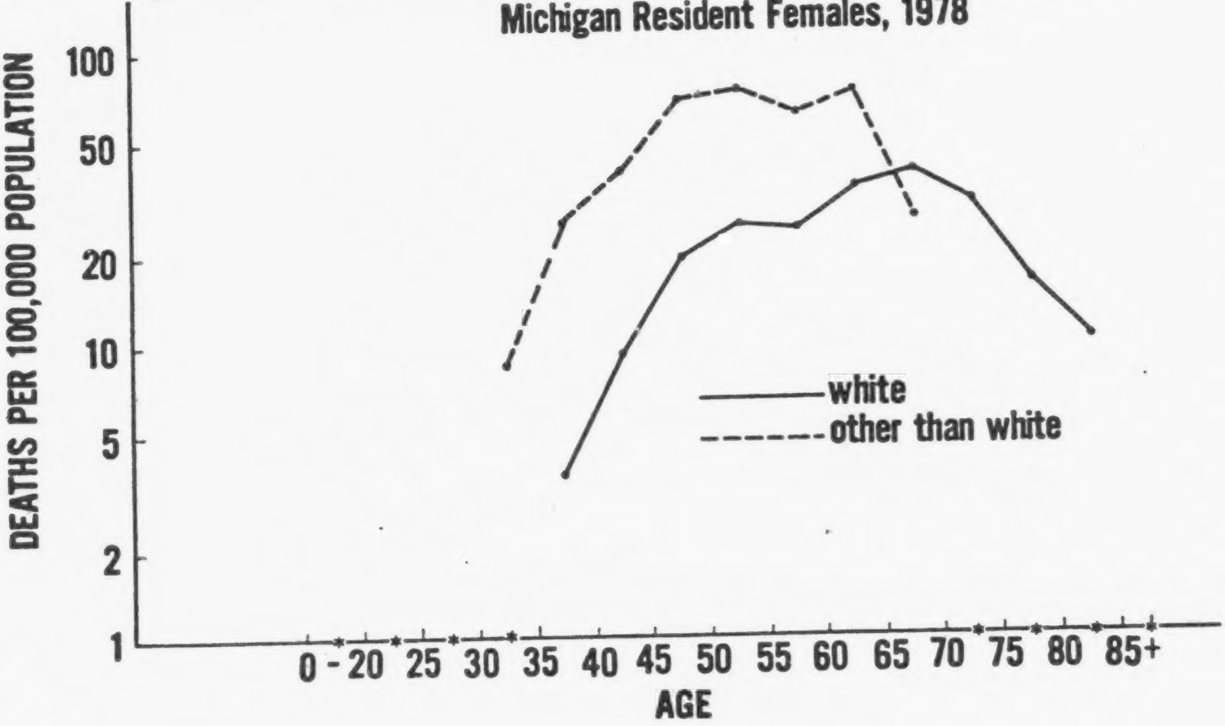
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.38 Age-Specific Cirrhosis of the Liver Death Rates[1] by Race
Michigan Resident Females, 1978



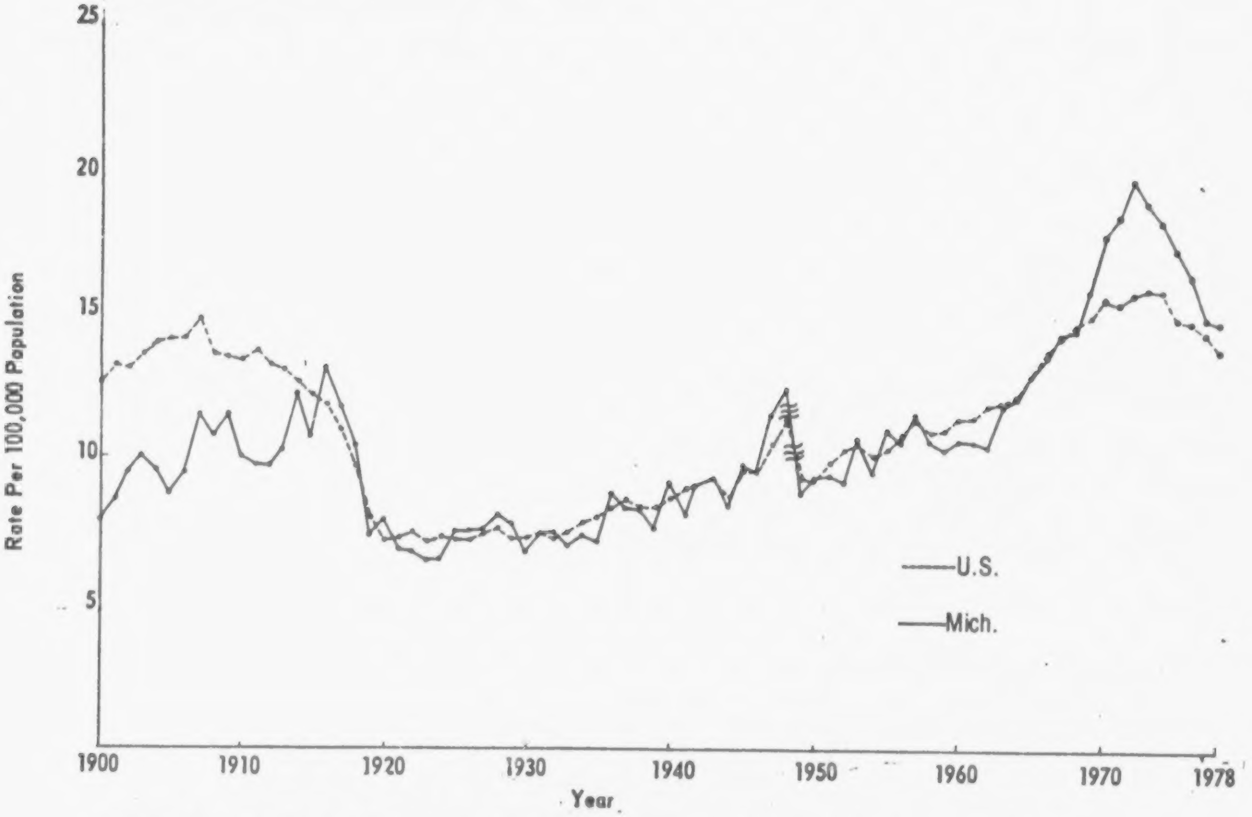
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Cirrhosis of the liver was the cause of death for 7.9 of every 100,000 Michigan residents in 1900. Mortality rates specific to this cause of death rose to a peak of 13.1 in 1916. The relative frequency of cirrhosis of the liver deaths then fell sharply, dropping to 7.4 in 1919. The Michigan rates held stable from this point until 1936 when they began increasing slowly. A peak of 12.4 was reached by 1948. The statistics shown in Figure 2.39 after 1948 are not comparable with preceding years, due to a revision of underlying cause of death determination. By isolating the period 1950-1978, this problem can be ignored. Michigan's mortality rate for this disease increased between 1950 and 1972 and has been decreasing since 1972.

The cirrhosis of the liver mortality rate for the United States was well above Michigan's rate early in this century. The highest rate for the nation in the 1900-1948 period occurred in 1907. The rates for Michigan were similar to those of the nation from about 1916 through 1948. Following the revision of ICD coding procedures for national statistics in 1949 and in Michigan in 1950, the rates for each dropped slightly. Rates for Michigan were generally at or below the United States figures through 1968. Between 1968 and 1972, rates for Michigan rose above the rate for the nation. The sharp drop in Michigan's rate since 1972 has brought the statistic for the state closer to the national figure. In 1978 the cirrhosis of the liver death rate of 14.7 for Michigan, nevertheless, was 7.3 percent above the estimated rate of 13.7 for the nation.

Age-adjusted rates for cirrhosis of the liver in the 1970's are recorded in Table 2.40. These rates have tended to decline for most population groups both in Michigan and the United States. The largest decrease was the decline from 48.8

FIGURE 2.39—Cirrhosis of the Liver Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



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[1] National rates are from death registration states for 1900-1932 and the United States for 1932-1978; U. S. rate for 1978 is provisional.

[2] The comparability of cirrhosis of the liver death rates from the 5th revision of the ICDA coding procedures with those of the 6th revision is considered weak. The comparability ratio is estimated to be .80. The 6th revision was adopted in 1949 for national cause-of-death statistics and in 1950 for Michigan statistics. The comparability of cirrhosis of the liver death rates through the 6th, 7th, and 8th revisions (1949 to date nationally and 1950 to date in Michigan) is high. General comparison before and after these dates of adoption can be made but detailed study require special consideration. See Technical Notes.

TABLE 2.40

Age-Adjusted Cirrhosis of the Liver Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	17.7	24.9	11.2	15.5	21.9	9.7	35.0	48.8	22.6
	1971	18.7	25.6	12.3	16.2	22.1	10.8	37.9	53.4	23.9
	1972	19.8	27.8	12.6	17.0	24.4	10.3	41.7	54.9	29.5
	1973	18.9	26.6	11.8	16.4	23.2	10.1	37.8	53.0	23.9
	1974	17.9	25.5	11.0	14.8	21.3	8.8	42.1	58.7	26.7
	1975	17.3	23.5	11.5	14.4	19.9	9.4	38.1	51.2	25.9
	1976	16.1	22.6	10.1	13.7	19.5	8.4	33.7	46.1	21.9
	1977	14.6	20.2	9.5	12.2	17.3	7.5	32.2	41.4	23.5
	1978	14.2	19.1	9.6	12.0	16.4	8.0	29.6	39.3	20.5
U.S.	1970	14.7	20.2	9.8	13.4	18.8	8.7	23.8	31.3	17.4
	1971	14.7	20.4	9.8	13.5	18.9	8.8	24.3	32.2	17.5
	1972	14.9	20.8	9.6	13.5	19.1	8.6	25.4	35.1	17.2
	1973	15.0	20.9	9.9	13.7	19.3	8.7	25.3	33.9	18.0
	1974	14.8	20.7	9.7	13.4	19.0	8.6	25.0	34.0	17.4
	1975	13.8	19.5	8.9	12.6	17.9	7.9	23.1	32.1	15.5
	1976	13.6	19.1	8.7	12.3	17.5	7.7	23.1	32.3	15.4
	1977	13.1	18.4	8.4	11.8	16.7	7.5	22.5	31.4	15.0
	1978	12.4 Pr.	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –

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1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

in 1970 to 39.3 in 1978 in the rate for other than white males. The rate for this group, however, remains substantially higher than for all other groups, including the rate for other than white males observed nationally. The rate for other than white females in Michigan was also considerably higher than the comparable rate for the nation.

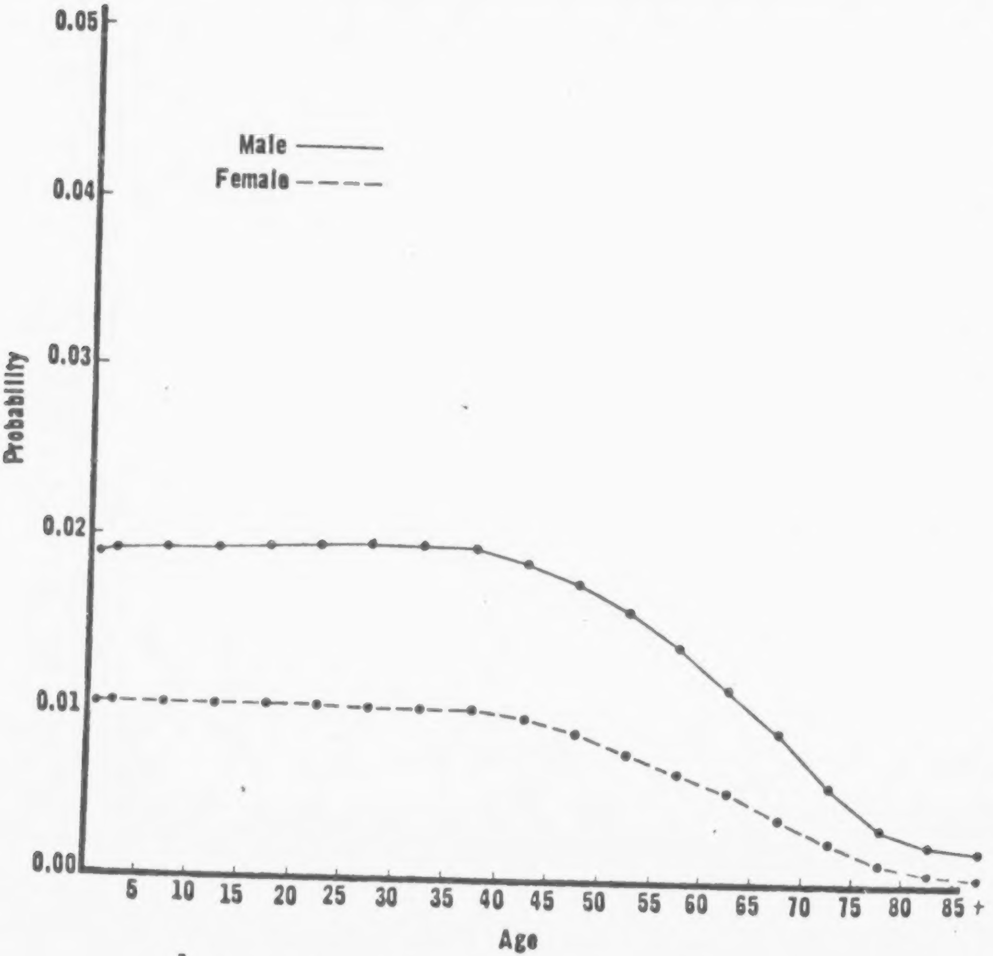
The contributing factor of alcoholism was reported for 480 or 35.5 percent of the cirrhosis of the liver deaths in 1978. There were 871 deaths due to this cause with no mention of alcoholism (Table 2.41). Between 1968 and 1972 the total number of cirrhosis of the liver deaths increased by 41.2 percent. Those with mention of alcoholism increased by 36 percent. During the next six years the total number of deaths due to cirrhosis of the liver decreased each year.

The probability of eventually dying from cirrhosis of the liver, based upon Michigan mortality data from the years 1976-1978, is displayed in Figure 2.40 by age and sex. This graph reveals that the risk of dying from this disease is much greater for males than females. At birth, males have a probability of 0.019 of dying from cirrhosis of the liver. For females the probability is 0.010. Death from cirrhosis of the liver displays a nearly constant level of risk for both sexes from birth to ages 40 through 44, whereupon the threat of death due to this disease diminishes with advancing age. By age 85, the risk is 0.001 for females and 0.002 for males.

TABLE 2.41 - Deaths due to Cirrhosis of the Liver by Mention of Alcoholism
Michigan Residents, 1968 - 1978

Year	Total	Without Mention of Alcoholism	With Mention of Alcoholism
1968	1,259	818	441
1969	1,430	911	519
1970	1,558	1,072	486
1971	1,657	1,061	596
1972	1,778	1,178	600
1973	1,711	1,257	454
1974	1,650	1,159	491
1975	1,574	1,079	495
1976	1,486	976	510
1977	1,356	917	439
1978	1,351	871	480

FIGURE 2.40 Probability of Eventually Dying from Cirrhosis of the Liver by Age and Sex, Michigan Residents 1976-1978[1]



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[1] Note: Should comparisons be desired between this graph and a Similar Graph Contained Herein that Pertains to Some Other specified cause of death, differences in scale may be encountered.

Arteriosclerosis

There were a total of 1,146 Michigan resident deaths attributed to arteriosclerosis in 1978. This cause was the 8th leading cause of death in the state. There were 460 deaths to males and 686 deaths to females. Only 54 of the 1,146 total deaths were to other than white persons.

The majority of the arteriosclerosis deaths were to persons of advanced ages. The median age of all deaths resulting from this disease was 84 years. The median age at death for males was slightly lower than for females (Table 2.42). Other than white males who died from this disease in 1978 had the lowest median age (77 years) of all population groups. This statistic for other than white females was 80.

Arteriosclerosis resulted in 12.5 deaths per 100,000 Michigan residents in 1978. Deaths for females resulting from this disease were relatively more frequent than for males with crude mortality rates of 14.7 and 10.2 respectively (Table 2.43). The age-adjusted rate for males, however, was 15 percent higher than that for females. Age-specific arteriosclerosis death rates were higher for males than females for the age groups 60-64 through 75-79 and lower for the age groups 80-84 and 85 and over. Rates for other than white persons were generally below those for white persons. The age-adjusted rate for other than white males was 36 percent below that of white males. The rate for other than white females was 39 percent lower than that for their white counterparts.

Age-specific arteriosclerosis death rates observed among Michigan residents in 1978 were highest for those in the oldest age groups. The arteriosclerosis

TABLE 2.42 - Deaths Due to Arteriosclerosis by Age, Race, and Sex
Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMAL
Under 1 Year.....	-	-	-	-	-	-	-	-	-	-	-	-
1-4 Years........	-	-	-	-	-	-	-	-	-	-	-	-
5-9 Years........	-	-	-	-	-	-	-	-	-	-	-	-
10-14 Years......	-	-	-	-	-	-	-	-	-	-	-	-
15-19 Years......	-	-	-	-	-	-	-	-	-	-	-	-
20-24 Years......	-	-	-	-	-	-	-	-	-	-	-	-
25-29 Years......	-	-	-	-	-	-	-	-	-	-	-	-
30-34 Years......	-	-	-	-	-	-	-	-	-	-	-	-
35-39 Years......	-	-	-	-	-	-	-	-	-	-	-	-
40-44 Years......	-	-	-	-	-	-	-	-	-	-	-	-
45-49 Years......	1	1	-	1	1	-	-	-	-	-	-	-
50-54 Years......	4	3	1	3	2	-	1	1	-	-	-	-
55-59 Years......	13	9	4	12	9	1	1	-	1	-	-	-
60-64 Years......	23	16	7	20	15	3	3	1	2	-	-	-
65-69 Years......	40	23	17	35	18	5	4	4	-	1	1	-
70-74 Years......	102	54	48	91	50	17	11	4	7	-	-	-
75-79 Years......	156	71	85	148	66	41	8	5	3	-	-	-
80-84 Years......	268	104	164	256	98	82	11	5	6	1	1	-
85-89 Years......	276	96	180	269	95	158	7	1	6	-	-	-
90 and Over......	263	83	180	255	79	174	8	4	4	-	-	-
All Ages	1,146	460	686	1,090	433	657	54	25	29	2	2	-
Median Age at Last Birthday	84	82	85	84	82	85	79	77	80	*	*	*

TABLE 2.43 - Arteriosclerosis Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	12.5	10.2	14.7	13.7	11.1	16.3	4.3	4.1	4.5
0 -49 Years........	*	*	*	*	*	*	*	*	*
50-54 Years........	*	*	*	*	*	*	*	*	*
55-59 Years........	2.7	3.9	*	2.8	4.3	*	*	*	*
60-64 Years........	5.8	8.4	3.4	5.7	8.8	2.7	*	*	*
65-69 Years........	13.5	16.7	10.8	13.9	15.8	12.2	*	*	*
70-74 Years........	48.4	58.8	40.3	48.2	61.5	38.2	49.5	*	59.9
75-79 Years........	93.5	106.2	85.0	96.3	107.8	88.6	61.1	89.2	*
80-84 Years........	191.3	187.4	193.9	198.4	194.0	201.3	104.1	111.7	98.6
85 and Over........	611.8	553.6	645.5	654.3	598.9	685.8	187.1	152.4	211.2
Age-Adjusted Rate [1]	5.6	6.0	5.2	5.8	6.3	5.4	3.5	3.9	3.3

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see technical notes.

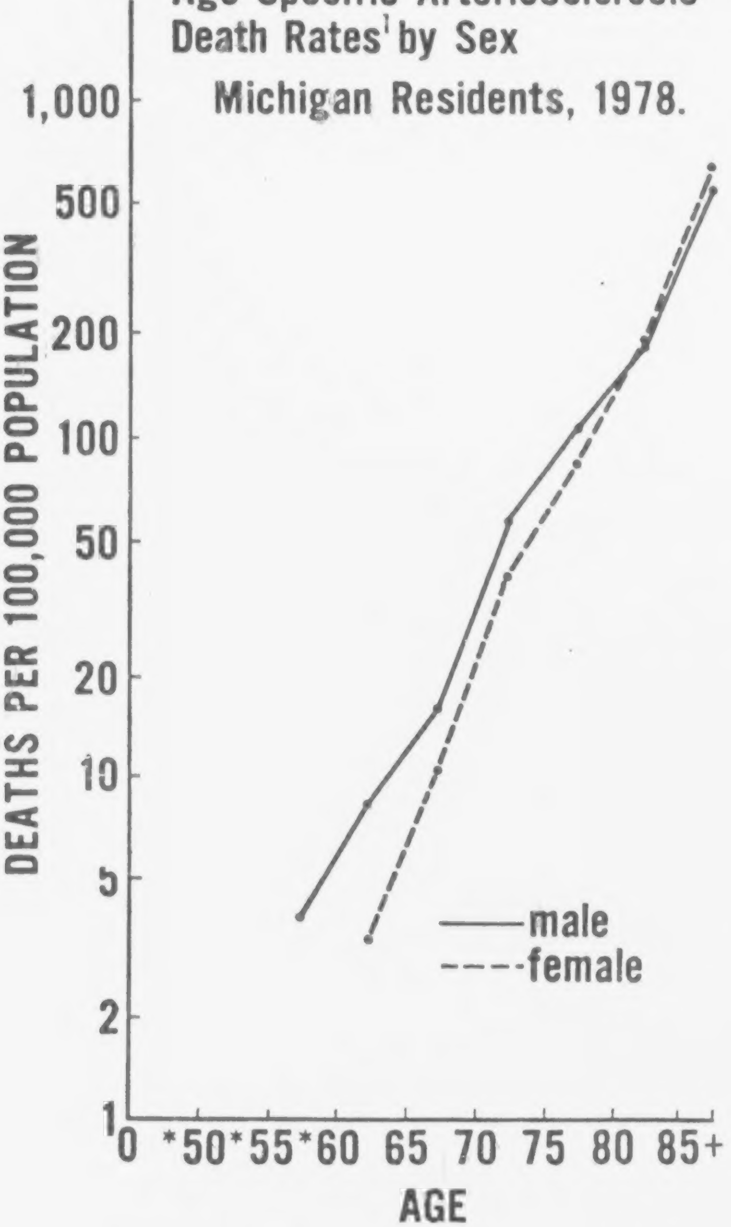
death rate rose sharply beyond age 74 About six of every 1,000 Michigan residents aged 85 or over died from this disease in 1978 (Figure 2.41).

Inspection of arteriosclerosis death rates since 1900 is far less informative than the historical data for other causes of death. The classification of this disease has been significantly altered several times since the inception of the ICD codes (see footnote of Figure 2.42). What can be seen in Figure 2.42 is a strong rise from 1900 to 1912. Rates in Michigan and the nation then stabilized and began declining through 1929. A coding revision then breaks comparability with 1930 rates. The arteriosclerosis death rates from 1930 to 1948 show no clear direction. From 1949 to 1967 the rates for the nation held fairly stable while in Michigan the rates dropped and then returned to national levels. Since 1968 the death rates due to arteriosclerosis in Michigan were below national rates.

Age-adjusted death rates have declined for all population groups in Michigan and the United States through the 1970's (Table 2.44). The rates for Michigan residents were generally lower than those for the nation, with Michigan's rates for other than white persons falling substantially below the comparable rates for the nation. Rates for other than white persons were markedly lower than those for white persons in Michigan and somewhat lower in the nation.

Virtually all arteriosclerosis deaths are reported as generalized and/or unspecified as to type. Only 14 of the 1,146 deaths were in other classifications (Table 2.45).

Figure 2.41



Age-Specific Arteriosclerosis Death Rates[1] by Sex

Michigan Residents, 1978.

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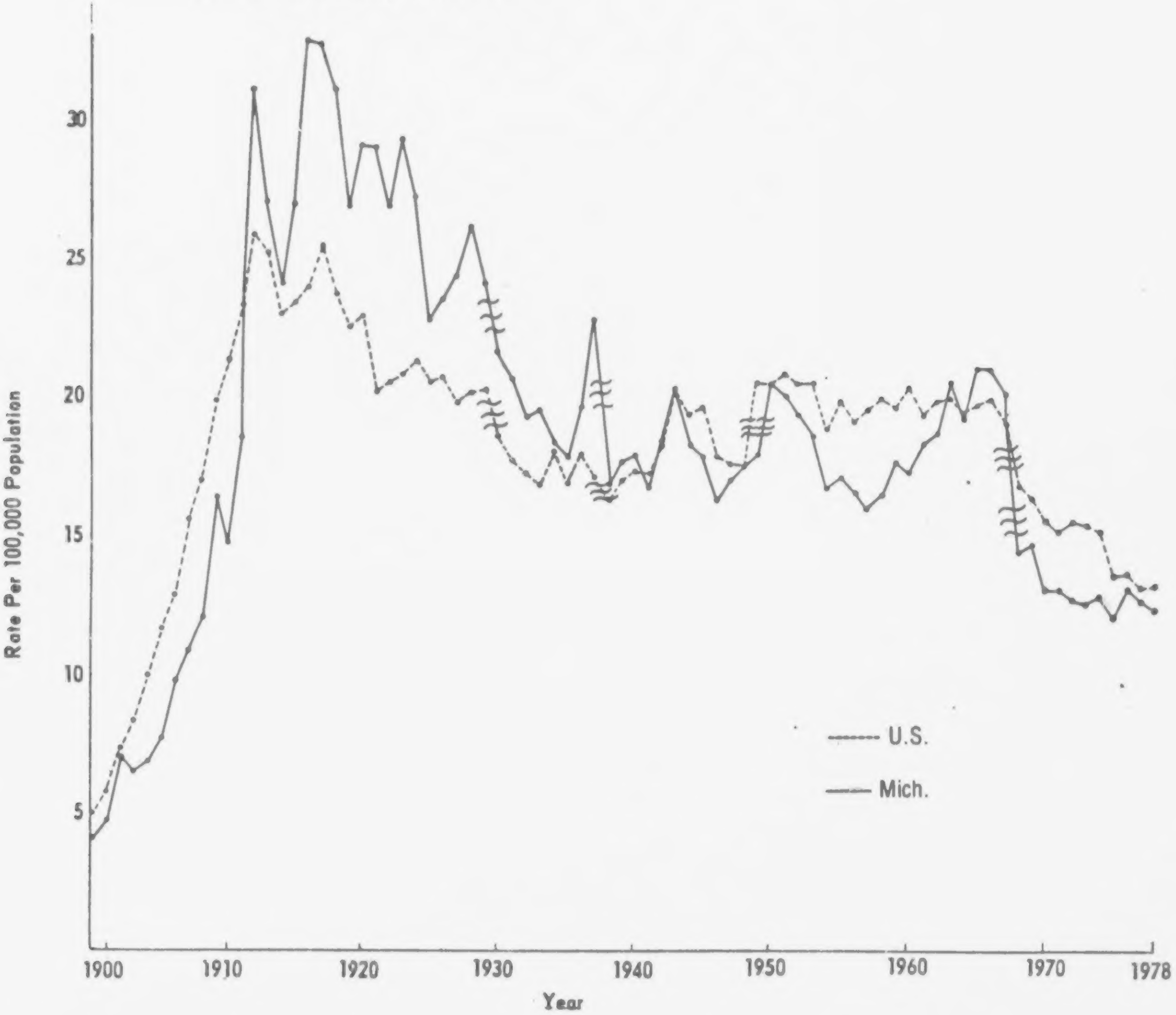
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

FIGURE 2.42.—Arteriosclerosis Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1] National rates are from death registration states for 1900-1932 and the United States for 1933-1978; U. S. rate for 1978 is provisional.

[2] Although Michigan and United States arteriosclerosis death rates are comparable for any given year, changes in the International Classification of Diseases over the years have made historic comparison of these rates extremely difficult. Comparability breaks are especially pronounced in the 1930, 1939, 1949 and 1968 revisions. Analysis of arteriosclerosis death rates over the time period 1900-1978 requires detailed study to maintain comparability.

TABLE 2.44

Age-Adjusted Arteriosclerosis Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	8.0	8.8	7.3	8.1	9.0	7.3	6.2	6.4	5.9
	1971	7.9	8.9	7.1	8.1	9.2	7.3	4.6	4.6	4.5
	1972	7.3	8.6	6.4	7.6	9.0	6.6	4.1	4.0	4.1
	1973	7.1	8.1	6.3	7.4	8.6	6.4	4.0	3.4	4.5
	1974	7.0	7.6	6.5	7.3	8.0	6.7	3.8	3.7	3.8
	1975	6.1	6.7	5.6	6.3	6.9	5.8	3.9	4.5	3.3
	1976	6.1	7.1	5.3	6.5	7.6	5.6	2.5	2.8	2.3
	1977	5.9	6.4	5.4	6.1	6.7	5.6	3.1	2.9	3.2
	1978	5.6	6.0	5.2	5.8	6.3	5.4	3.5	3.9	3.3
U.S.	1970	8.4	9.5	7.5	8.4	9.6	7.5	8.2	9.1	7.5
	1971	8.2	9.0	7.6	8.3	9.1	7.6	7.9	8.4	7.5
	1972	8.2	9.3	7.4	8.2	9.3	7.4	8.4	9.6	7.5
	1973	8.0	8.9	7.3	8.0	9.0	7.2	7.8	8.5	7.2
	1974	7.6	8.6	6.9	7.6	8.7	6.9	7.3	8.2	6.6
	1975	6.6	7.5	5.9	6.6	7.5	5.9	6.1	7.0	5.4
	1976	6.4	7.3	5.8	6.5	7.4	5.8	5.7	6.2	5.3
	1977	6.2	7.1	5.5	6.2	7.2	5.5	5.7	6.4	5.1
	1978	6.1pr.	---	---	---	---	---			

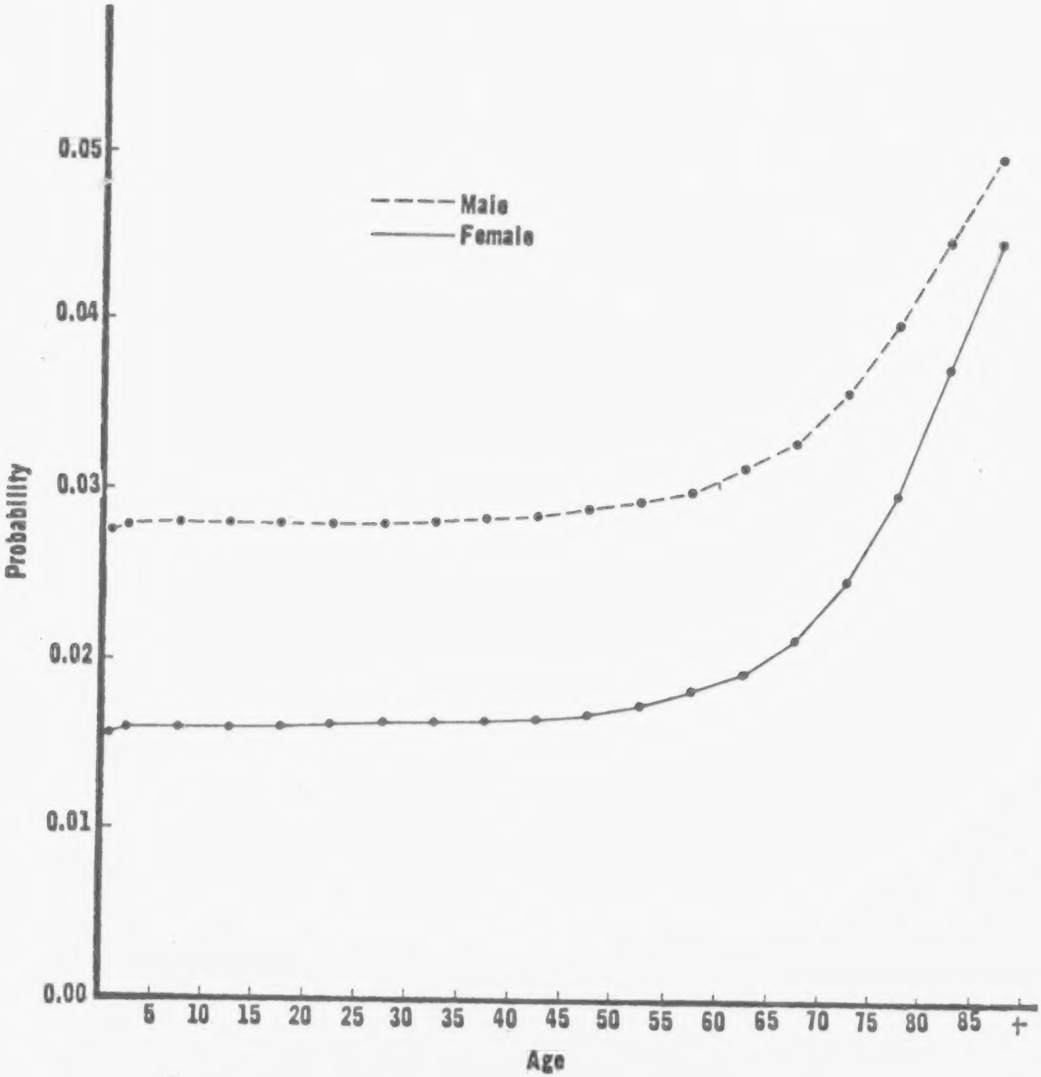
1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

TABLE 2.45 - Deaths Due to Arteriosclerosis by Detailed Cause, Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER	PERCENT
440.0	Of Aorta	4	0.3
440.2	Of Arteries of the Extremities	9	0.8
440.3	Of Other Specific Arteries	1	0.1
440.9	Generalized and Unspecified	1,132	98.8
	TOTAL	1,146	100.0

The 1976 through 1978 mortality data for Michigan indicate that females are more likely to eventually die from arteriosclerosis than males. At birth, the likelihood for females is 0.028, while for males it is 0.016. These probabilities rise slowly through age 49 and increase rapidly beyond age 49 By age 85, the probability of eventually dying from arteriosclerosis is 0.050 for females and 0.045 for males (Figure 2.43).

FIGURE 2.43 - Probability of Eventually Dying from Arteriosclerosis by Age and Sex, Michigan Residents, 1976-1978 [1]



[1] Note: Should comparisons be desired between this graph and a similar Graph Contained Herein that Pertains to some other Specified Cause of Death, Differences in Scale May be Encountered.

Suicide

There were a total of 1,132 suicide deaths in 1978, making suicide the 9th leading cause of death. Seventy-five percent of the deaths resulting from suicide were to males. About 89 percent of all suicide deaths were to white persons.

Fifty percent of all suicide deaths occurred at or below the age of 36. The median age of death for males was 34 years, 7 years below that for females. The median ages at death for white males and females were 35 and 42 years respectively. For other than white males the median age at death was 32 years and for other than white females, 31 years (Table 2.46).

The crude suicide death rate in 1978 was 12.3 per 100,000 population. The crude rate for males (18.7) was three times that for females (6.1). Age-specific rates for males were higher in all age groups except the 45-49 age group (Table 2.47 and Figure 2.44). While suicide rates for males were highest among men in their twenties and those aged 60 or over, the rates for females were highest between ages 35 and 49.

The crude suicide death rate for the white population was 33.3 percent higher than that for the other than white population. The age-adjusted rate for white persons was 22.2 percent higher than that for other than white persons. Age-specific rates by race from Table 2.47 are displayed in Figure 2.45. Age-specific rates for white persons were higher in seven of the nine age intervals with sufficient events to calculate rates for both racial groups. The suicide death rate for the other than white population aged 60 or over was 6.7, well below the comparable rate for white persons of 19.1.

TABLE 2.46 - Deaths Due to Suicide by Age, Race, and Sex, Michigan Residents, 1978

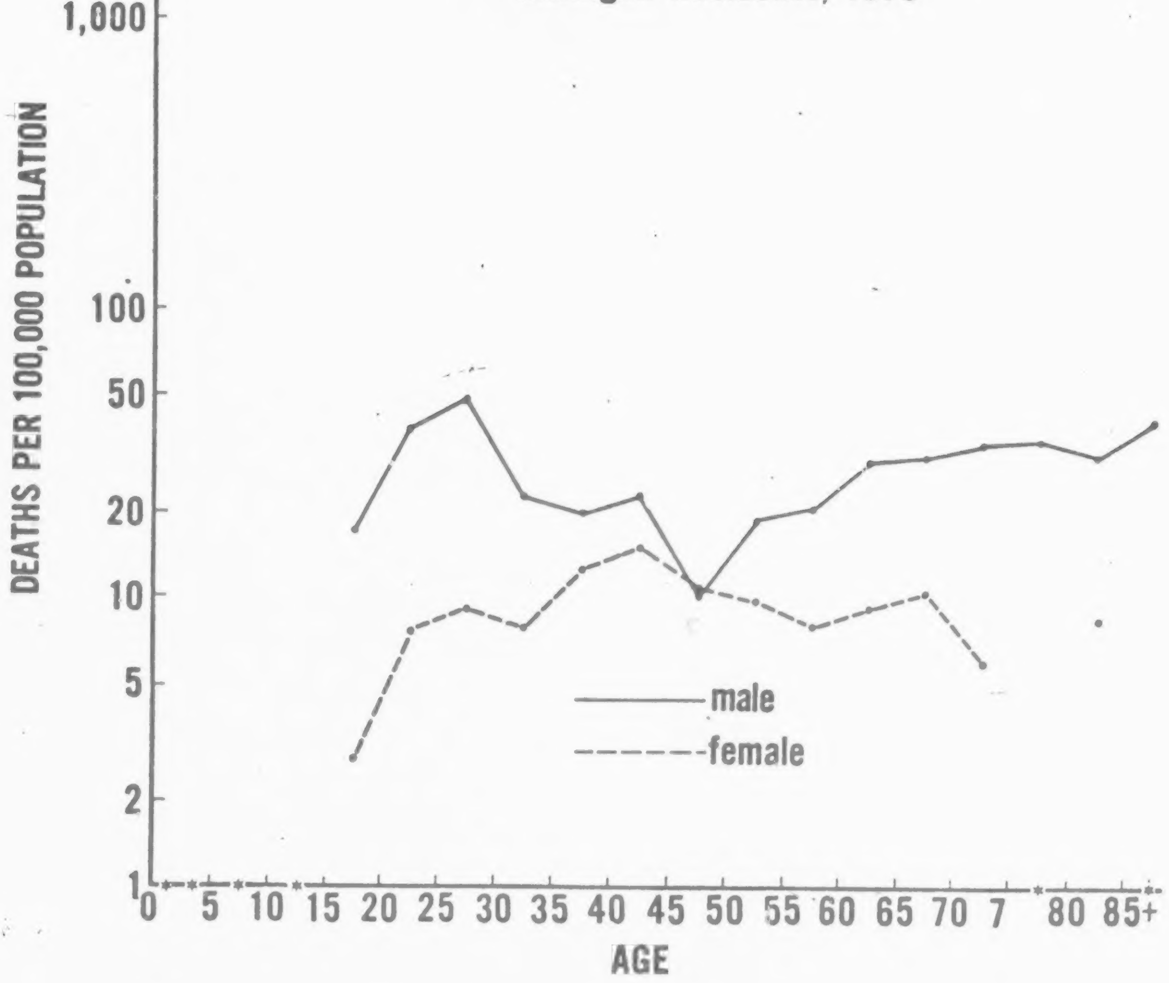
AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	-	-	-	-	-	-	-	-	-	-	-	-
1-4 Years........	-	-	-	-	-	-	-	-	-	-	-	-
5-9 Years........	-	-	-	-	-	-	-	-	-	-	-	-
10-14 Years......	7	3	4	6	3	3	1	-	1	-	-	-
15-19 Years......	94	81	13	83	74	9	11	7	4	-	-	-
20-24 Years......	174	144	30	149	126	23	25	18	7	-	-	-
25-29 Years......	148	118	30	128	103	25	19	14	5	1	1	-
30-34 Years......	105	78	27	93	69	24	12	9	3	-	-	-
35-39 Years......	94	61	33	80	51	29	14	10	4	-	-	-
40-44 Years......	76	48	28	68	43	25	8	5	3	-	-	-
45-49 Years......	60	37	23	52	32	20	7	4	3	1	1	-
50-54 Years......	74	48	26	67	45	22	6	3	3	1	-	1
55-59 Years......	67	47	20	61	43	18	6	4	2	-	-	-
60-64 Years......	75	56	19	74	55	19	1	1	-	-	-	-
65-69 Years......	58	42	16	55	39	16	3	3	-	-	-	-
70-74 Years......	38	31	7	36	29	7	2	2	-	-	-	-
75-79 Years......	25	23	2	22	20	2	2	2	-	1	1	-
80-84 Years......	24	17	7	24	17	7	-	-	-	-	-	-
85-89 Years......	10	10	-	10	10	-	-	-	-	-	-	-
90 and Over......	3	3	-	2	2	-	1	1	-	-	-	-
All Ages	1,132	847	285	1,010	761	249	118	83	35	4	3	1
Median Age at Last Birthday	36	34	41	37	35	42	31	32	31	*	*	*

TABLE 2.47 - Suicide Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	12.3	18.7	6.1	12.8	19.5	6.2	9.6	13.9	5.5
Under 1 Year.......	*	*	*	*	*	*	*	*	*
1-4 Years..........	*	*	*	*	*	*	*	*	*
5-9 Years..........	*	*	*	*	*	*	*	*	*
10-14 Years........	0.7	*	*	0.8	*	*	*	*	*
15-19 Years........	10.0	17.2	2.8	10.4	18.6	2.3	7.5	9.6	*
20-24 Years........	22.6	38.3	7.6	22.9	39.8	6.9	20.6	30.3	11.3
25-29 Years........	25.8	48.4	9.1	25.7	48.5	8.7	26.3	47.8	11.2
30-34 Years........	15.3	22.6	7.9	15.5	22.6	8.1	14.0	23.0	*
35-39 Years........	16.6	19.9	12.7	16.2	18.9	13.0	18.7	27.3	*
40-44 Years........	19.1	22.7	15.0	19.6	23.1	15.5	15.7	19.7	*
45-49 Years........	13.4	10.0	10.6	13.5	16.2	10.5	13.0	*	*
50-54 Years........	14.0	18.4	9.7	14.6	19.5	9.7	9.8	*	*
55-59 Years........	13.8	20.1	7.9	14.1	20.7	8.0	11.3	*	*
60-64 Years........	18.9	29.4	9.2	20.9	32.4	10.3	*	*	*
65-69 Years........	19.6	30.5	10.2	21.2	32.4	11.5	*	*	*
70-74 Years........	18.0	33.7	5.9	19.1	35.7	6.5	*	*	*
75-79 Years........	15.0	34.4	*	15.0	34.3	*	*	*	*
80-84 Years........	17.1	30.6	8.3	18.5	33.3	8.9	*	*	*
85 and Over........	14.8	40.2	*	15.0	41.3	*	*	*	*
Age-Adjusted Rate [1]	13.0	20.0	6.7	13.2	20.6	6.7	10.8	16.4	6.2

[1] Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940, see technical notes.

Figure 2.44 Age-Specific Suicide Death Rates[1] by Sex
Michigan Residents, 1978



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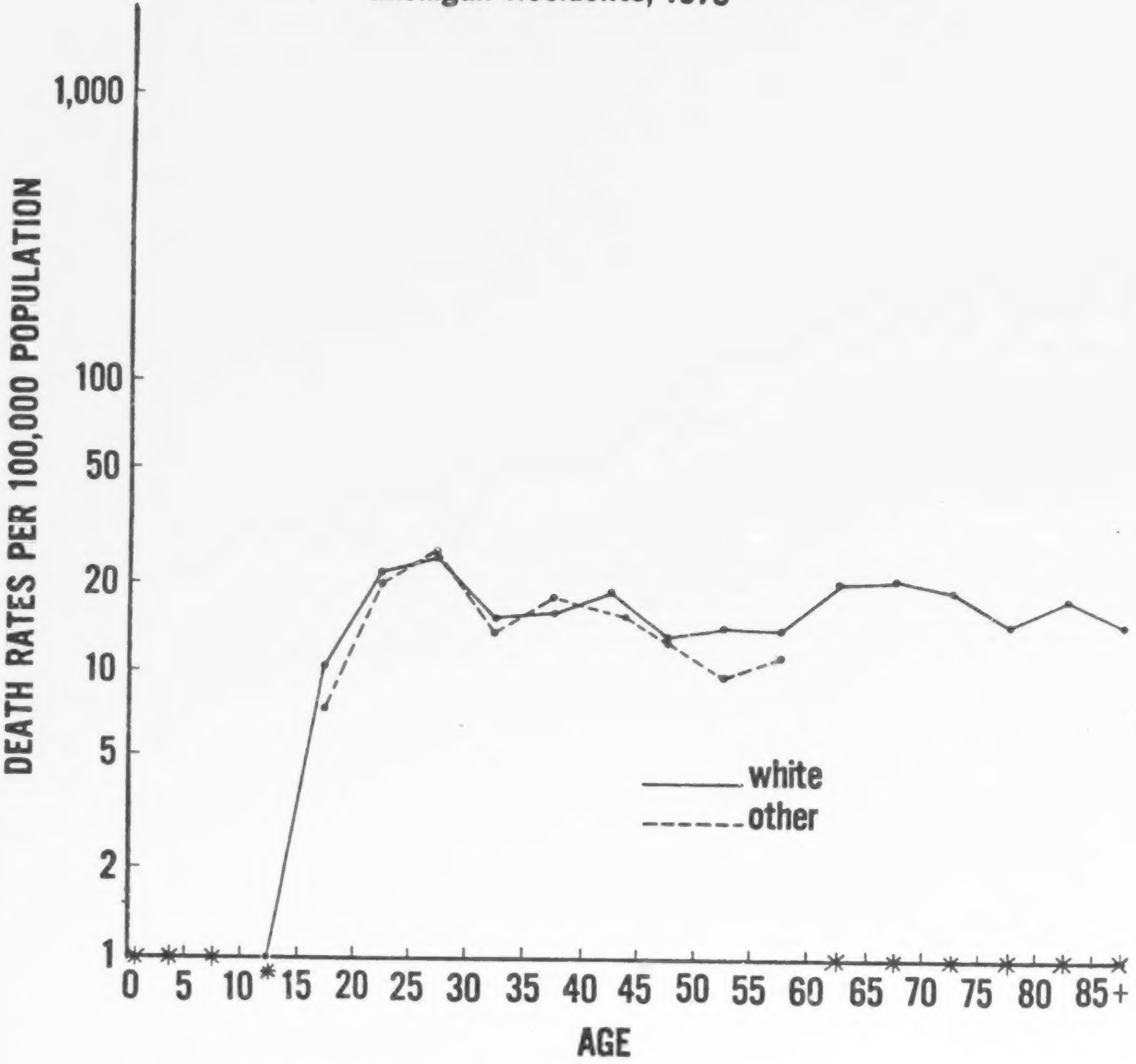
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.45 Age-Specific Suicide Death Rates[1] by Race, Michigan Residents, 1978



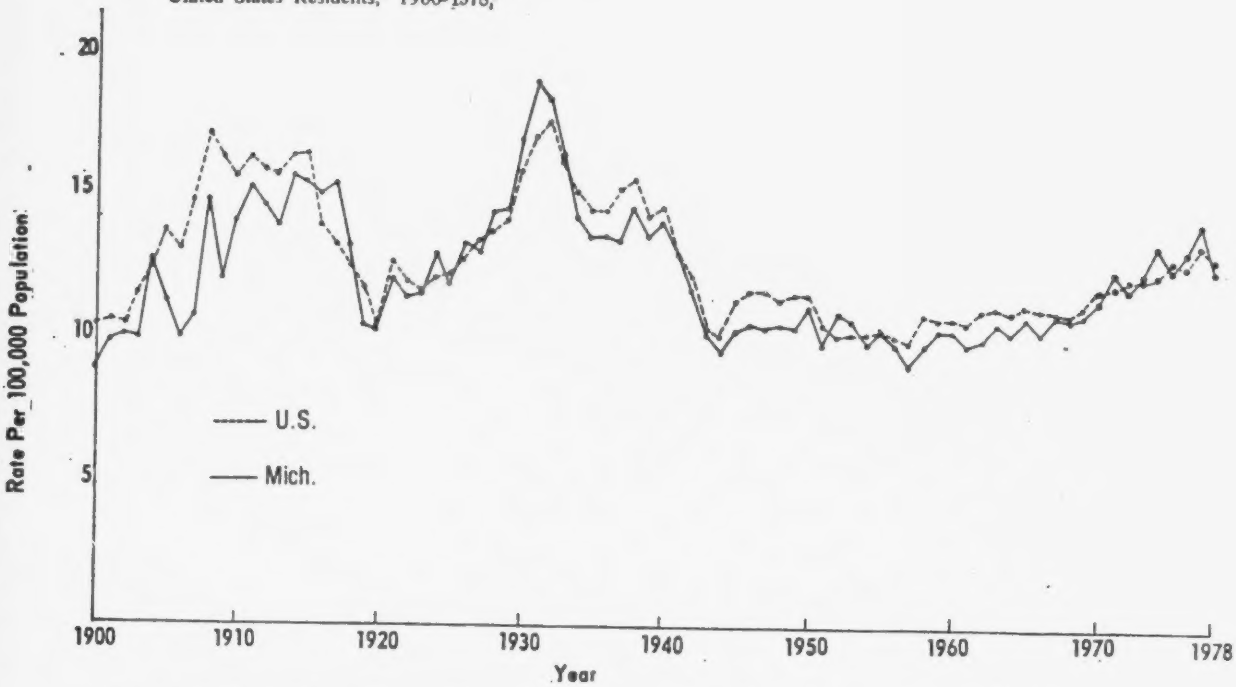
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

The suicide death rates of Michigan and the United States followed a cyclical path from 1900 to 1944. There were two complete cycles of rising then falling rates in that time period. The rates since 1943 held fairly stable for several years then began a slow increase in both Michigan and the United States. There is strong similarity in both the trend and magnitude of Michigan and national rates in this century (Figure 2.46). In 1900 the rate was 8.8 in Michigan, the lowest rate observed. The highest was 18.8 in 1931. For the nation high and low rates were observed in 1932 (17.4) and in 1944 and 1952 (10.0). In 1978 the rate for the United States was an estimated 12.6, compared to Michigan's rate of 12.3.

Age-adjusted suicide death rates by race and sex for Michigan and the United States in the 1970's are presented in Table 2.48. Age-adjusted rates for suicide have increased for all major population groups except white females. Although rates for other than white persons experienced a more substantial increase than those for white persons between 1970 and 1978, the rates for white persons remained higher than those of their other than white counterparts throughout the period. The rates in Michigan for the other than white population were significantly higher than those of the nation. Rates in Michigan for the white population groups were slightly higher than those of the nation.

Suicides in Michigan were predominantly the result of one of four types of self-inflicted injury. Self-inflicted injury by firearms and explosives caused 598 deaths in 1978. Self-inflicted poisoning by non-domestic gases resulted in 172 deaths. Hanging, strangulation and suffocation resulted in 154 deaths.

FIGURE 2.46.—Suicide Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1] National rates are from death registration states for 1900-1932 and the United States for 1933-1978; U. S. rate for 1978 is provisional.

[2] Suicide death rates since 1900 are suitable for general comparison over time but detailed study (such as time series) requires special consideration. See Technical Notes.

TABLE 2.48

Age-Adjusted Suicide Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	11.9	17.3	6.9	12.4	17.9	7.4	7.4	12.0	3.2
	1971	13.2	18.4	8.5	13.3	18.5	8.7	11.2	16.6	6.4
	1972	12.3	18.1	7.0	12.8	18.6	7.4	8.6	13.4	4.3
	1973	13.0	19.7	6.9	13.4	20.2	7.2	9.8	15.8	4.4
	1974	13.8	20.1	8.1	14.4	20.9	8.4	9.5	13.9	5.6
	1975	13.3	19.9	7.2	13.7	20.4	7.5	10.2	16.0	4.9
	1976	13.8	20.6	7.5	14.1	21.0	7.7	11.2	17.2	5.9
	1977	14.6	22.5	7.5	15.1	23.2	7.9	10.9	17.9	5.1
	1978	13.0	20.0	6.7	13.2	20.6	6.7	10.8	16.4	6.2
U.S.	1970	11.8	17.3	6.8	12.4	18.2	7.2	6.5	10.3	3.3
	1971	11.9	17.2	7.1	12.5	18.0	7.5	7.0	10.4	3.9
	1972	12.1	17.9	6.9	12.7	18.5	7.4	7.5	11.9	3.6
	1973	12.0	18.0	6.6	12.6	18.7	7.1	7.2	11.6	3.3
	1974	12.2	18.2	6.7	12.8	19.0	7.1	7.2	11.7	3.3
	1975	12.6	19.0	6.9	13.3	19.8	7.3	7.5	12.1	3.5
	1976	12.3	18.5	6.6	12.9	19.2	7.0	7.6	12.3	3.5
	1977	12.9	19.7	6.8	13.6	20.6	7.2	7.8	12.6	3.7
	1978	12.2Pr.	---	---	---	---	---	---	---	---

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[1] - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

Combined with 131 deaths due to poisoning by solids and liquids, these four types of suicide accounted for 93.2 percent of all suicidal deaths to Michigan residents in 1978 (Table 2.49).

Over the ten year period from 1968 to 1978 the number of suicide deaths rose by 21.6 percent. The greatest number occurred in 1977 when there were 1,280 deaths from suicide. Among the various methods of suicide the largest relative as well as absolute increase in numbers of deaths occurred in suicide by firearms and explosives (Table 2.50). Deaths in this category increased by 48 percent from 404 in 1968 to 598 in 1978. In 1968 firearms and explosives were the method used in 43.4 percent of all Michigan resident suicide deaths. In each of the past five years over 50 percent of all suicide deaths have involved firearms and explosives.

Using the Michigan mortality experience of 1976 through 1978, the chance of a male eventually dying from suicide is 0.016 at birth. The risk for females is 0.006. These probabilities hold relatively constant to age 25, then taper slowly with advancing age.

TABLE 2.49 - Deaths Due to Suicide by Method, Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENT
955	Suicide by Firearms and Explosives	598	52.8
952	Suicide Poisoning by Other Gases	172	15.2
953	Suicide by Hanging, Stranulation or Suffocation	154	13.6
950	Suicide Poisoning by Solid and Liquid Substances	131	11.6
958	Suicide by Other and Unspecified Means	24	2.1
957	Suicide by Jumping from High Place	22	1.9
954	Suicide by Submersion	16	1.4
956	Suicide by Cutting and Piercing Instruments	15	1.3
	TOTAL	1,132	99.9

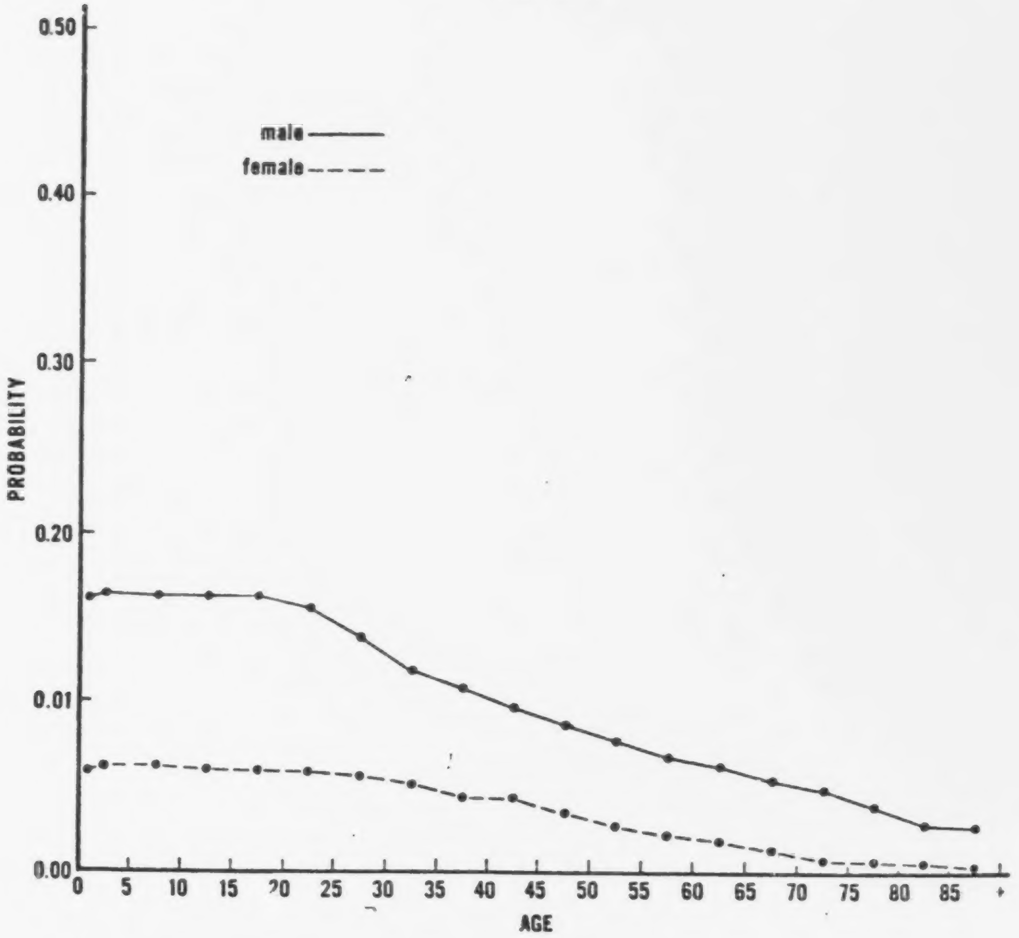
TABLE 2.50

Deaths Due to Suicide by Method
Michigan Residents, 1968 - 1978

Year	Total[1]	Firearms and Explosives	Poisoning by Gases	Hanging Strangulation or Suffocation	Poisoning by Solid and Liquid Substances	Jumping from High Place	Submersion	Cutting and Piercing Instruments
1968	931	404	161	148	127	19	28	22
1969	978	437	138	158	145	16	41	13
1970	992	466	175	164	120	17	21	11
1971	1,119	488	188	178	176	23	29	10
1972	1,044	504	149	138	170	19	26	16
1973	1,117	507	172	177	184	16	29	12
1974	1,205	618	185	190	151	14	19	15
1975	1,136	570	190	173	134	22	22	11
1976	1,182	637	153	189	130	16	24	12
1977	1,280	683	169	190	163	26	19	12
1978	1,132	598	172	154	131	22	16	15

[1] Rows do not add to total as other and unspecified methods are included in the total.

FIGURE 2.47 Probability of Eventually Dying from Suicide by Age and Sex, Michigan Residents 1975-1978[1]



[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

HOMICIDE

There were 931 deaths as the result of homicide among Michigan residents in 1978. Of these, 706 or 76 percent were to males compared to 225 to females. About 63 percent of all homicide victims were other than white persons. The 116 deaths for other than white females constituted 51.6 percent of all female homicide victims. Other than white males comprised 66.3 percent of all deaths for males attributed to homicide.

The median age at death for all homicide victims in 1978 was 29 years for both males and females. The median age at death for white males was 30 years and for white females 38 years. On the other hand, other than white male homicide victims had a median age three years greater than that of other than white females (29 vs. 26) (Table 2.51).

There were 10.1 homicide deaths for every 100,000 Michigan residents in 1978 (Table 2.52). The overall rate of death for males due to homicide was 15.6. This was 3.3 times that of females (4.8). Age-specific homicide rates for males were above those for females at all ages under 75 years in 1978 (Figure 2.48). From age groups 15-19 through 65-69 the rates for males ranged from 2.1 to 6.7 times those for females. The crude death rate for the other than white population was 10.7 times that of the white population. Age-specific death rates for other than white persons were consistently much higher than those for white persons, ranging from 3.0 to 21.7 times the rates for white persons in categories with sufficient events to calculate rates (Figure 2.49). For males the disparity between races was especially pronounced, with the crude death rate for other than white men 12.7 times that of their white counterparts. Among females, the rate for other than white women was 6.7 times that of white females. The peak rate for both white and other than white males was in the age group 25-29. For females, the rate for other than white women also peaked in the 25-29 age group while the peak for white women was in the 75-79 age group (Table 2.52).

Homicide in Michigan was negligible in 1900 when compared to today. The rate at the turn of the century was 0.6, the lowest rate observed over the 79 years

TABLE 2.51 - Deaths Due to Homicide by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHER			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year.....	10	7	3	1	1	-	9	6	3	-	-	-
1-4 Years........	16	9	7	10	5	5	6	4	2	-	-	-
5-9 Years........	9	5	4	5	3	2	4	2	2	-	-	-
10-14 Years......	8	6	2	4	3	1	4	3	1	-	-	-
15-19 Years......	89	64	25	34	23	11	55	41	14	-	-	-
20-24 Years......	173	130	43	52	36	16	121	94	27	-	-	-
25-29 Years......	162	132	30	56	46	10	106	86	20	-	-	-
30-34 Years......	115	91	24	28	21	7	87	70	17	-	-	-
35-39 Years......	63	56	7	22	18	4	41	38	3	-	-	-
40-44 Years......	61	43	18	26	14	12	35	29	6	-	-	-
45-49 Years......	65	48	17	22	13	9	43	35	8	-	-	-
50-54 Years......	47	34	13	17	9	8	30	25	5	-	-	-
55-59 Years......	41	34	7	21	17	4	19	16	3	1	1	-
60-64 Years......	23	18	5	11	10	1	12	8	4	-	-	-
65-69 Years......	16	11	5	10	6	4	6	5	1	-	-	-
70-74 Years......	14	10	4	13	9	4	1	1	-	-	-	-
75-79 Years......	10	3	7	7	-	7	3	3	-	-	-	-
80-84 Years......	4	2	2	4	2	2	-	-	-	-	-	-
85-89 Years......	2	-	2	2	-	2	-	-	-	-	-	-
90 and Over......	2	2	-	1	1	-	1	1	-	-	-	-
Not Stated.......	1	1	-	-	-	-	1	1	-	-	-	-
All Ages	931	706	225	346	237	109	584	468	116	1	1	-
Median Age at Last Birthday	29	29	29	31	30	38	29	29	26	*	*	000

TABLE 2.52 - Homicide Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	10.1	15.6	4.8	4.4	6.1	2.7	46.9	77.5	18.1
Under 1 Year.......	7.4	10.1	*	*	*	*	36.0	48.2	*
1-4 Years..........	2.9	3.2	2.6	2.2	2.1	2.2	6.4	*	*
5-9 Years..........	1.0	1.1	*	0.7	*	*	*	*	*
10-14 Years........	0.9	1.3	*	*	*	*	*	*	*
15-19 Years........	9.4	13.6	5.3	4.3	5.8	2.8	37.3	56.5	18.6
20-24 Years........	22.4	34.6	10.9	8.0	11.4	4.8	99.6	158.4	43.5
25-29 Years........	28.2	54.2	9.1	11.2	21.7	3.5	139.2	273.9	44.7
30-34 Years........	16.8	26.4	7.0	4.7	6.9	2.4	101.9	178.9	36.7
35-39 Years........	11.1	18.2	2.7	4.5	6.7	*	54.9	103.8	*
40-44 Years........	15.3	20.3	9.6	7.5	7.5	7.4	68.5	114.3	23.4
45-49 Years........	14.5	20.8	7.9	5.6	6.4	4.7	79.6	126.6	30.4
50-54 Years........	8.9	13.1	4.9	3.6	3.9	3.4	49.2	83.5	16.1
55-59 Years........	8.4	14.6	2.8	5.1	8.7	*	35.6	62.2	*
60-64 Years........	5.8	9.4	2.4	3.1	5.9	*	27.3	38.1	*
65-69 Years........	5.4	8.0	3.2	3.9	5.0	*	16.8	28.8	*
70-74 Years........	6.6	10.9	*	6.9	11.1	*	*	*	*
75-79 Years........	6.0	4.5	7.0	4.6	*	7.6	*	*	*
80-84 Years........	*	*	*	*	*	*	*	*	*
85 and Over........	*	*	*	*	*	*	*	*	*
Age-Adjusted Rate [1]	11.2	17.7	5.2	4.7	6.8	2.8	53.1	91.7	19.4

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[1] Based on age-specific death rates per 100,000 population is specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerate in 1940; see technical notes.

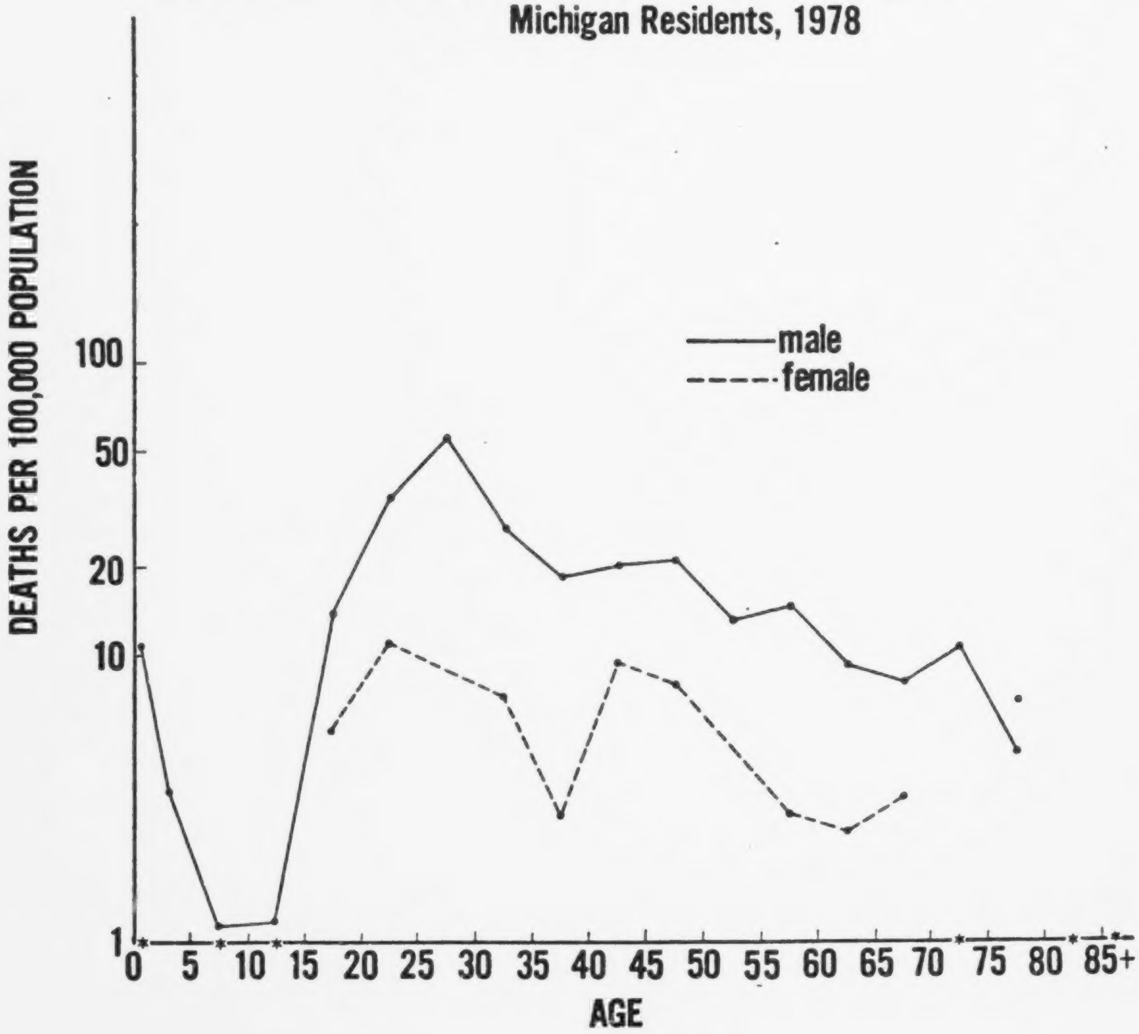

Figure 2.48 Age-Specific Homicide Death Rates[1] by Sex
Michigan Residents, 1978

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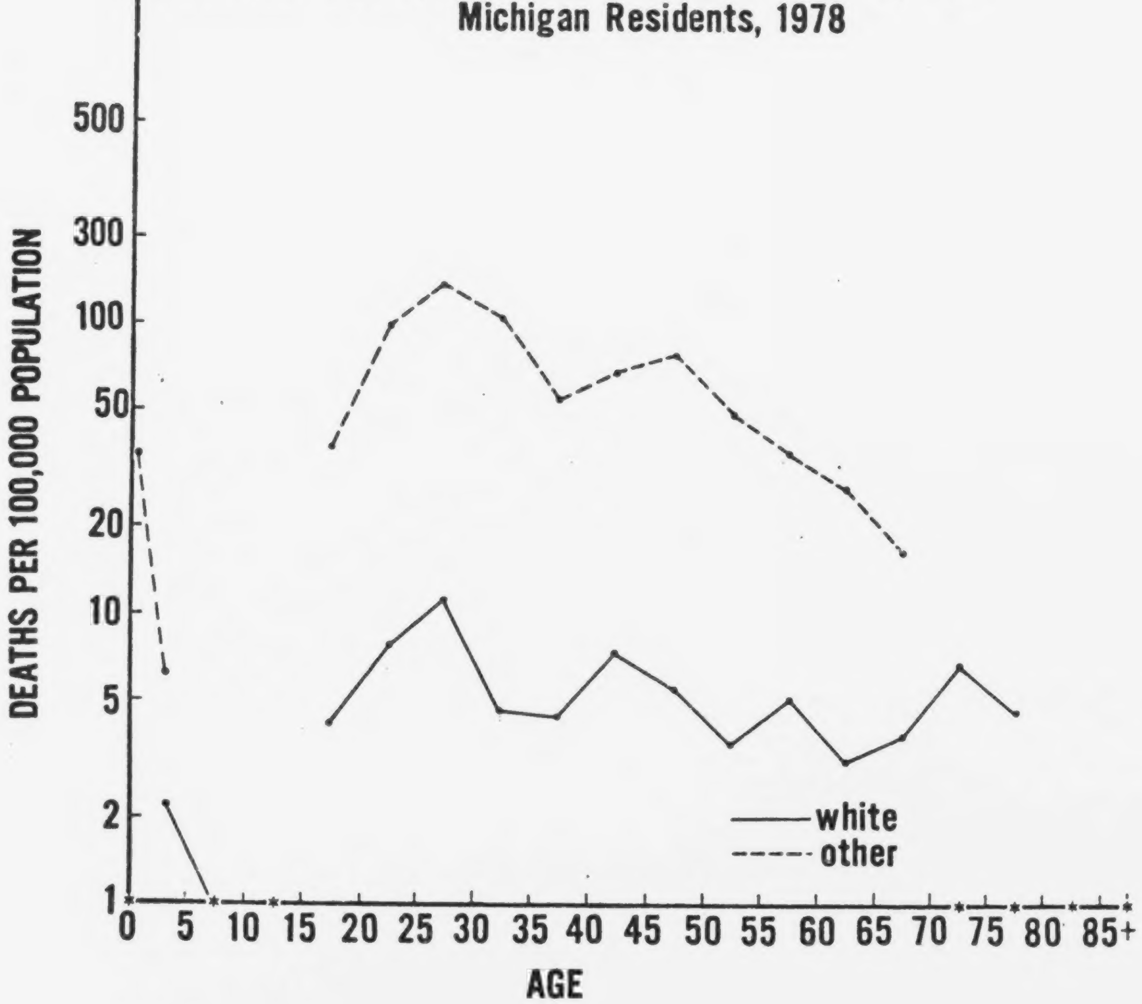
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.49 Age-Specific Homicide Death Rates[1] by Race Michigan Residents, 1978



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[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

from 1900 to 1978. The highest rate for this period was 13.6, observed in 1974.

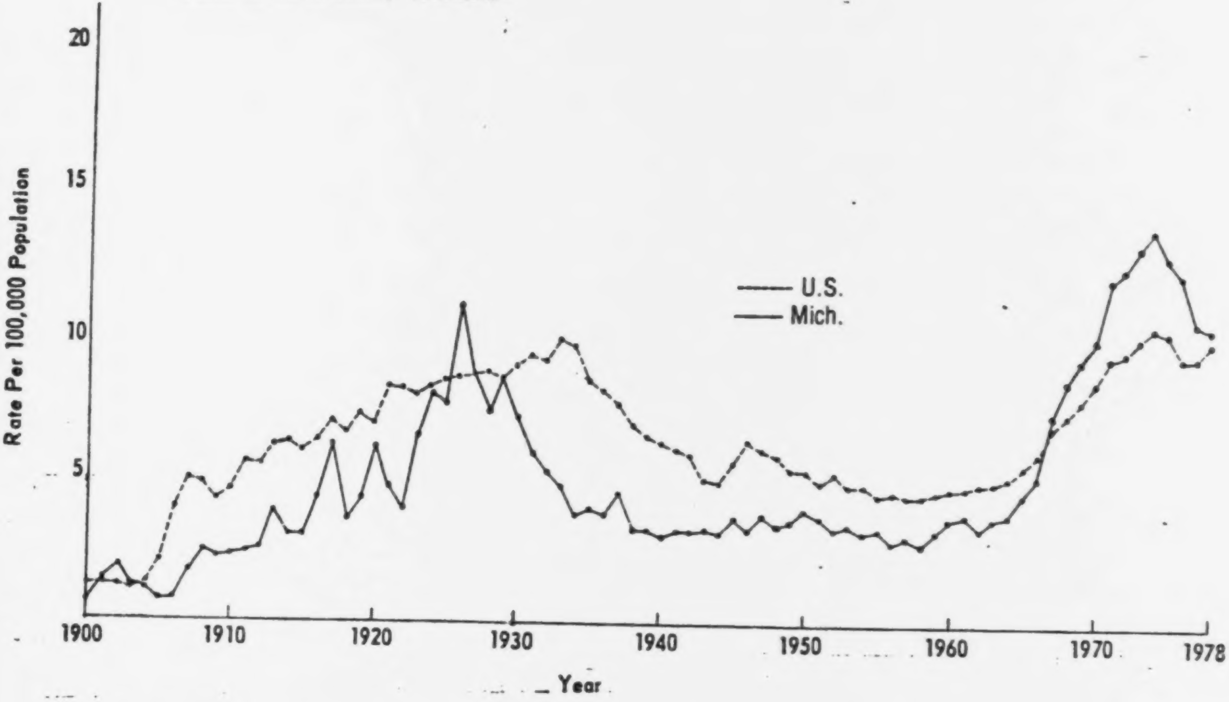
The homicide death rate in Michigan rose in the early part of this century to a peak of 10.6 in 1926 whereupon it then declined (Figure 2.50). It was relatively stable from 1934 through 1964. In the years 1965 through 1974 Michigan's rate rose from 3.7 homicides per 100,000 population in 1965 to the century high mark of 13.6 reached in 1974. The statistics for 1978 of 10.1 constitutes the fourth consecutive decline in the annual homicide mortality rate after 12 years of rising rates.

From 1900 to 1964, the homicide rate in Michigan was above the rate for the nation only five times. In each of the last eleven years from 1968-1978 Michigan's rate has been higher than that observed nationally. In 1978, the rate of death due to homicide in Michigan was 4.1 percent above the provisional rate of 9.7 observed nationally.

Age-adjusted homicide death rates by race and sex for Michigan and the United States in the 1970's are shown in Table 2.53. For the total population of Michigan the age-adjusted rate increased from 10.9 in 1970 to a peak of 14.8 in 1974, then fell by 1978 to about the level observed in 1970. The only major population group in Michigan to experience a decline (16.6 percent) over this period was other than white males. The largest relative increase was 27.3 percent for white females. The overall age-adjusted rate for Michigan remained substantially higher than the comparable rate for the nation, although figures for the United states for white males were continually higher than those for Michigan.

The methods used in 1978 for the commission of homicide are listed in Table 2.54. Assault by firearms and explosives resulted in 640 deaths, or 68.7 percent of all homicide deaths. Next most frequent was assault by cutting and piercing instruments. These two methods when combined constituted 83.5 percent of homicide deaths. Another 3.4 percent of these deaths were the result of hanging and strangulation.

FIGURE 2.50—Homicide Death Rates, Michigan and United States Residents,[1] 1900-1978[2]



[1] National rates are from death registration states for 1900-1932 and the United States for 1933-1978; U. S. rate for 1978 is provisional.

[2] Homicide death rates since 1900 are suitable for general comparison over time but detailed study (such as time series) requires special consideration. See Technical Notes.

TABLE 2.53

Age-Adjusted Homicide Death Rates[1] by Race and Sex, Michigan and United States Residents, 1970-1978

Place	Year	ALL RACES			WHITE			OTHER THAN WHITE		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Michigan	1970	10.9	18.4	3.9	4.4	6.7	2.2	60.6	110.0	16.6
	1971	13.5	22.6	4.9	4.7	7.2	2.3	78.5	140.7	23.2
	1972	13.6	22.4	5.4	5.0	7.4	2.7	75.4	133.7	23.2
	1973	14.4	23.6	5.7	5.2	7.6	3.0	79.4	141.4	23.5
	1974	14.8	24.2	5.8	5.6	8.8	2.7	78.5	135.9	26.9
	1975	14.0	22.5	5.9	5.6	8.4	2.9	70.9	121.7	25.6
	1976	13.2	21.6	5.2	5.3	8.2	2.6	66.0	115.2	22.0
	1977	11.4	18.2	5.1	4.6	6.4	2.9	56.8	99.4	19.3
	1978	11.2	17.7	5.2	4.7	6.8	2.8	53.1	91.7	19.4
U.S.	1970	9.1	14.9	3.7	4.7	7.3	2.2	41.3	72.8	13.7
	1971	10.0	16.3	4.0	5.1	7.9	2.3	46.8	81.6	16.0
	1972	10.3	16.8	4.0	5.2	8.2	2.4	46.6	83.1	14.8
	1973	10.5	16.7	4.5	5.7	8.7	2.8	44.4	77.1	16.0
	1974	10.8	17.3	4.6	6.0	9.3	2.9	44.5	77.9	15.5
	1975	10.5	16.8	4.5	6.1	9.4	2.9	41.1	71.6	14.7
	1976	9.5	15.1	4.1	5.5	8.6	2.7	36.4	63.3	13.2
	1977	9.6	15.1	4.2	5.9	8.8	2.9	34.5	60.1	12.5
	1978	9.9Pr.	---	---	---	---	---	---	---	---

1 - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

TABLE 2.54 Deaths Due to Homicide by Method
Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENT
965	Assault by Firearms and Explosives	640	68.7
966	Assault by Cutting and Piercing Instruments	137	14.7
968	Assault by Other and Unspecified Means	98	10.5
963	Assault by Hanging and Strangulation	32	3.4
970	Injury Due to Legal Interventions by Firearms	15	1.6
962	Assault by Poisoning	5	0.5
960	Fight, Brawl or Rape	2	0.2
969	Late Effect Injury Inflicted by Other Person	1	0.1
976	Injury Legal Intervention by Unspecified Means	1	0.1
	TOTAL	931	99.8

Over the last eleven years the number of homicides involving firearms and explosives increased by 25.2 percent, rising from 511 in 1968 to 640 in 1978 (Table 2.55). However, since the total number of homicides increased at a faster rate (30.6 percent), the percentage of homicides which involved firearms and explosives decreased slightly, from 71.7 percent in 1968 to 68.7 percent in 1978. Relative increases occurred in homicide by cutting and piercing instruments (from 13.6 to 14.7 percent of the total), and by hanging and strangulation (from 1.0 to 3.4 percent of the total).

With homicide most prevalent at younger ages, the probability of eventual death due to homicide is as high at birth as at any other age, according to Michigan death data by cause in 1976-1978 (Figure 2.51). The chance of a male eventually dying from this cause is 0.013 at birth. The risk for females is 0.004. The risk for both sexes stays about at these levels until the late 20's. With advancing age, the probability of eventually dying from homicide declines, becoming negligible for ages over 84.

Table 2.55

Deaths due to Specified Types of Homicide
Michigan Residents, 1968 - 1978

Year	Total[1]	Assault by Firearms and Explosives	Assault by Cutting and Piercing Instruments	Hanging and Strangulation	Legal Interventions by Firearms	Poisoning	Fight Brawl or Rape
1968	713	511	97	7	11	6	1
1969	811	582	118	18	15	8	4
1970	876	634	109	24	9	2	2
1971	1,091	809	122	27	19	1	6
1972	1,103	796	148	29	14	3	3
1973	1,180	819	164	45	31	-	4
1974	1,241	898	199	40	21	-	3
1975	1,158	816	163	43	24	-	1
1976	1,092	778	139	44	28	2	-
1977	946	613	149	55	24	1	4
1978	931	640	137	32	15	5	2

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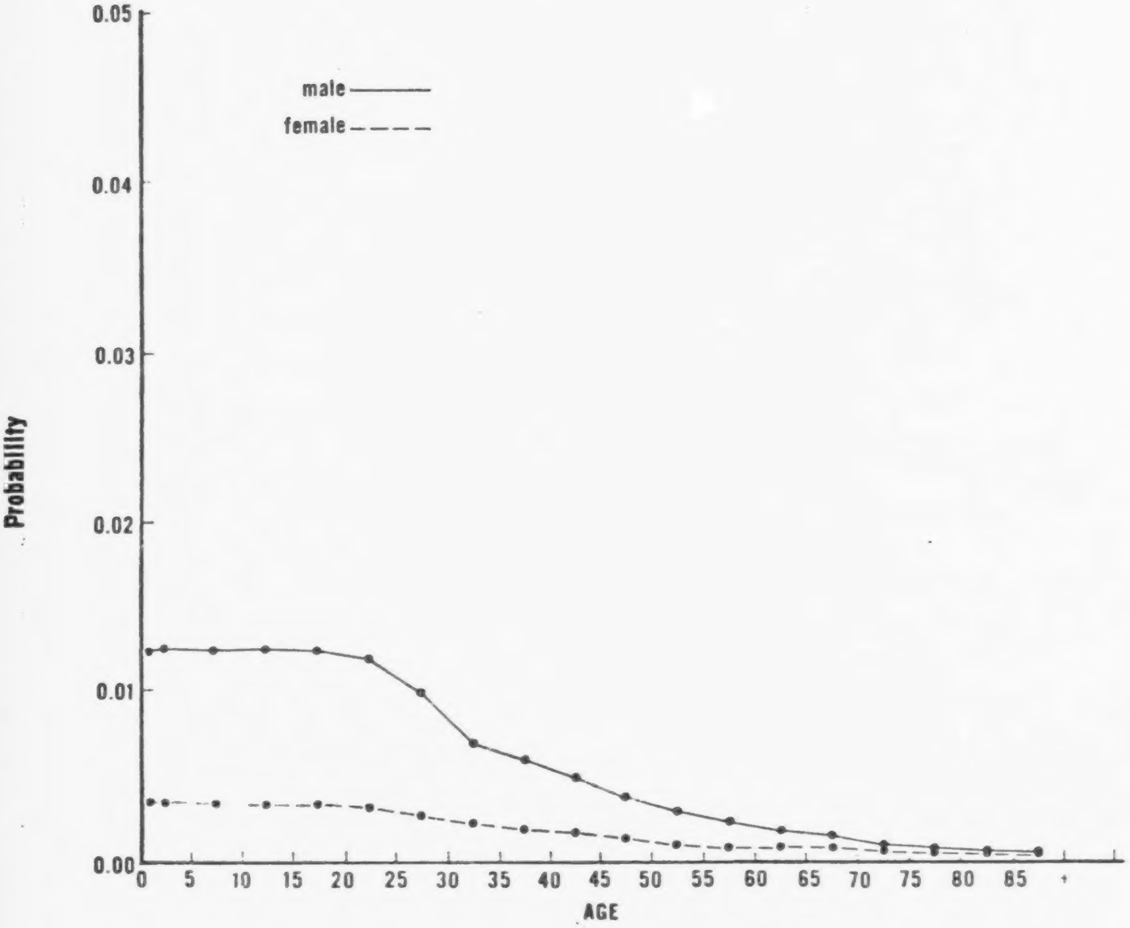
[1] Rows do not add to total as total includes other and unspecified methods.

FIGURE 2.51 - Probability of Eventually Dying from Homicide[1] by Age and Sex, Michigan Residents, 1976-1978



[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Chronic Obstructive Lung Disease

Chronic obstructive lung disease (C.O.L.D.) caused the death of 1,053 Michigan residents in 1978. If chronic obstructive lung disease was included in the list of 111 categories used for ranking leading causes of death it would be the 10th leading cause of death in Michigan in 1978. Chronic obstructive lung disease is, by international rules, assigned to the category "Other diseases of lung" (ICDA No. 519.2). Beginning with data year 1969 the United States established a separate category (denoted by *519.3) to identify deaths assigned to chronic obstructive lung disease. Effective with data for 1972 the title was changed to chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema.

The generalized term "chronic obstructive lung disease" has come into increasing use in the past decade instead of a more specific diagnosis of "emphysema," "bronchitis," or "asthma."[1] Death rates for these complementary categories for the period 1970-1978 are provided in Table 2.56. The rate for chronic obstructive lung disease increased steadily while a decline occurred in the rate of death for the combined category of bronchitis, emphysema, and asthma. The rate for the two categories combined, however, increased by 28 percent between 1970 and 1978. A similar pattern can be observed in the rates for the United States. The ninth revision of the International Classification of Diseases introduced for use in 1979 brings these causes together in a new grouping, chronic obstructive pulmonary diseases and allied conditions.

In 1978, 778 males and 275 females died from C.O.L.D. (Table 2.57). The frequency of chronic obstructive lung disease deaths rose with increasing age. Ninety percent of C.O.L.D. deaths occurred at age 60 or over. The median age at death for all persons dying of this cause was 73 years. The median age for white persons was also 73 years while that for other than white persons was 68 years. The median age for all males dying of chronic obstructive lung disease was two years above that for all females.

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1 - NCHS *Monthly Vital Statistics Report*, Vol. 27 #13, pg. 8.

Table 2.56

Mortality Rates for Various Respiratory Diseases

Michigan and United States Residents

1970 - 1978

Year	Cause					
	Bronchitis, Emphysema and Asthma (ICDA # 490-493)		Chronic Obstructive Lung Disease without mention of Asthma, Bronchitis, or Emphysema (ICDA # * 519.3)		Combination of ICDA # 490-493 and * 519.3	
	Michigan	United States	Michigan	United States	Michigan	United States
1970	16.8	15.2	---	2.2	16.8	17.4
1971	16.6	14.6	0.3	3.1	16.9	17.8
1972	15.3	14.8	3.0	3.9	18.3	18.7
1973	15.4	14.2	3.8	5.4	19.1	19.6
1974	12.8	12.7	4.6	6.8	17.4	19.5
1975	12.3	12.0	6.1	8.3	18.4	20.2
1976	11.5	11.4	7.9	---	19.4	---
1977	10.1	10.3	8.6	---	18.7	---
1978	10.0	10.0Pr	11.5	---	21.5	---

TABLE 2.57 Deaths Due to Chronic Obstructive Lung Disease by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			ALL OTHERS			RACE NOT STATED		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMAL
Under 1 Year	-	-	-	-	-	-	-	-	-	-	-	-
1-4 Years	-	-	-	-	-	-	-	-	-	-	-	-
5-9 Years	-	-	-	-	-	-	-	-	-	-	-	-
10-14 Years	-	-	-	-	-	-	-	-	-	-	-	-
15-19 Years	-	-	-	-	-	-	-	-	-	-	-	-
20-24 Years	-	-	-	-	-	-	-	-	-	-	-	-
25-29 Years	1	1	-	1	1	-	-	-	-	-	-	-
30-34 Years	-	-	-	-	-	-	-	-	-	-	-	-
35-39 Years	2	1	1	2	1	1	-	-	-	-	-	-
40-44 Years	5	3	2	2	2	-	3	1	2	-	-	-
45-49 Years	10	6	4	8	4	4	2	2	-	-	-	-
50-54 Years	34	24	10	24	15	9	10	9	1	-	-	-
55-59 Years	55	43	12	50	40	10	5	3	2	-	-	-
60-64 Years	130	86	44	112	73	39	18	13	5	-	-	-
65-69 Years	168	117	51	153	103	50	15	14	1	-	-	-
70-74 Years	196	150	46	182	138	44	13	12	1	1	-	1
75-79 Years	211	170	41	202	163	39	9	7	2	-	-	-
80-84 Years	125	92	33	118	88	30	7	4	3	-	-	-
85-89 Years	84	65	19	77	59	18	7	6	1	-	-	-
90 and Over	32	20	12	32	20	12	-	-	-	-	-	-
All Ages	1053	778	275	963	707	256	89	71	18	1	-	1
Median Age at Last Birthday	73	73	71	73	74	71	68	68	*	*	000	*

The crude death rate for chronic obstructive lung disease was 11.5 per 100,000 population. The crude death rate for males was 2.9 times that for females (Table 2.58). Crude mortality rates for white persons were substantially above comparable rates for other than white persons. On an age-adjusted basis, the rate for white persons was 13 percent above that of other than white persons.

Age-specific rates for males and females from Table 2.58 are graphically presented in Figure 2.52. The strong association between chronic obstructive lung disease and increasing age is clearly evident. Note also that age-specific rates for males are substantially higher than those for females in all age groups.

Age-specific rates by race are displayed in Figure 2.53. Rates for white persons were above those for other than white persons in six of eight age groups with sufficient events to calculate rates.

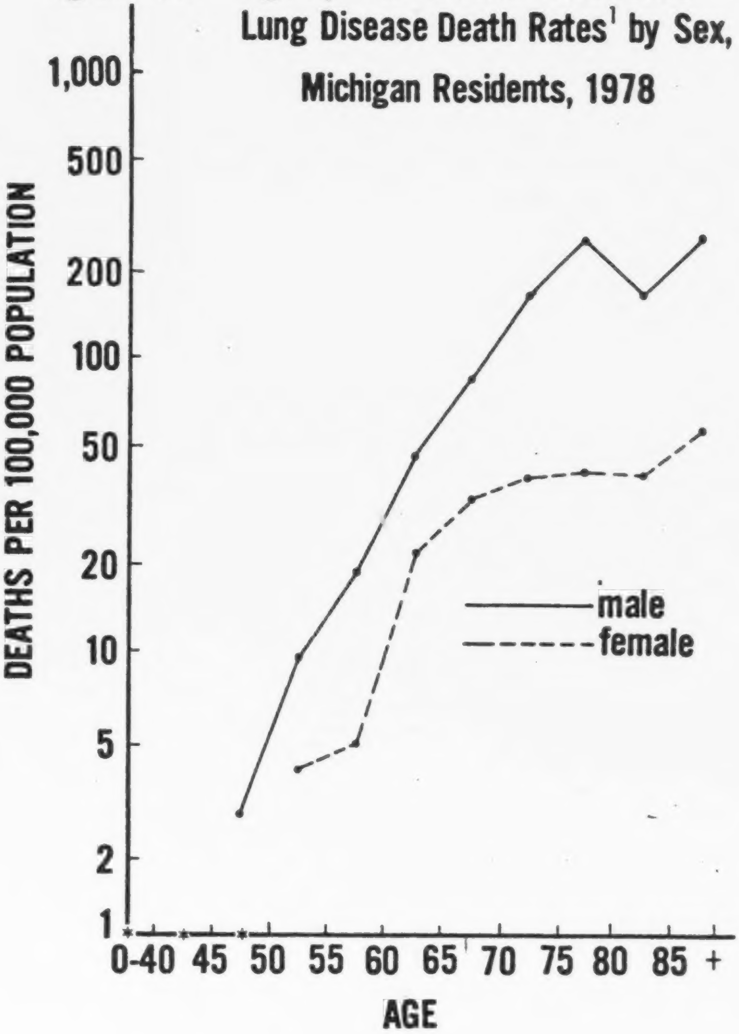
Based on mortality data from 1976-1978, the probability of eventual death due to chronic obstructive lung disease is 0.017 for males and 0.006 for females at birth. The probability for males increases steadily to a peak of 0.020 between ages 60 and 64, remains at that level through the 70 to 74 age group and then declines in the last few age groups. The probability for females remains stable from birth through the 65 to 69 age group and then declines in the oldest age groups (Figure 2.54). It should be recalled that these probability estimates are based on mortality data which have been changing rapidly, in part due to changing diagnostic conventions.

TABLE 2.58 - Chronic Obstructive Lung Disease Death Rates by Age, Race, and Sex, Michigan Residents, 1978

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
All Ages-Crude Rate	11.5	17.2	5.9	12.1	18.0	6.4	7.2	11.8	2.8
0-39 Years........	*	*	*	*	*	*	*	*	*
40-44 Years........	1.3	*	*	*	*	*	*	*	*
45-49 Years........	2.2	2.6	*	2.0	*	*	*	*	*
50-54 Years........	6.4	9.2	3.7	5.1	6.5	3.8	16.4	20.1	*
55-59 Years........	11.3	18.4	4.7	11.5	19.3	4.4	9.4	*	*
60-64 Years........	32.7	45.1	21.2	31.7	43.0	21.2	41.0	61.9	21.8
65-69 Years........	56.9	84.9	32.4	58.9	85.5	36.0	42.0	80.7	*
70-74 Years........	93.0	163.3	38.7	97.0	169.7	41.9	58.5	114.1	*
75-79 Years........	126.5	254.4	41.0	131.4	266.2	42.2	68.7	124.8	*
80-84 Years........	89.2	165.7	39.0	91.1	172.4	38.2	66.3	*	*
85 and Over........	131.7	262.9	55.6	136.1	271.9	58.8	87.3	182.9	*
Age-Adjusted Rate[1]	8.1	13.5	3.9	8.1	13.6	4.0	7.2	12.0	*

[1] - Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940; see Technical Notes.

Figure 2.52 Age-Specific Chronic Obstructive Lung Disease Death Rates[1] by Sex, Michigan Residents, 1978



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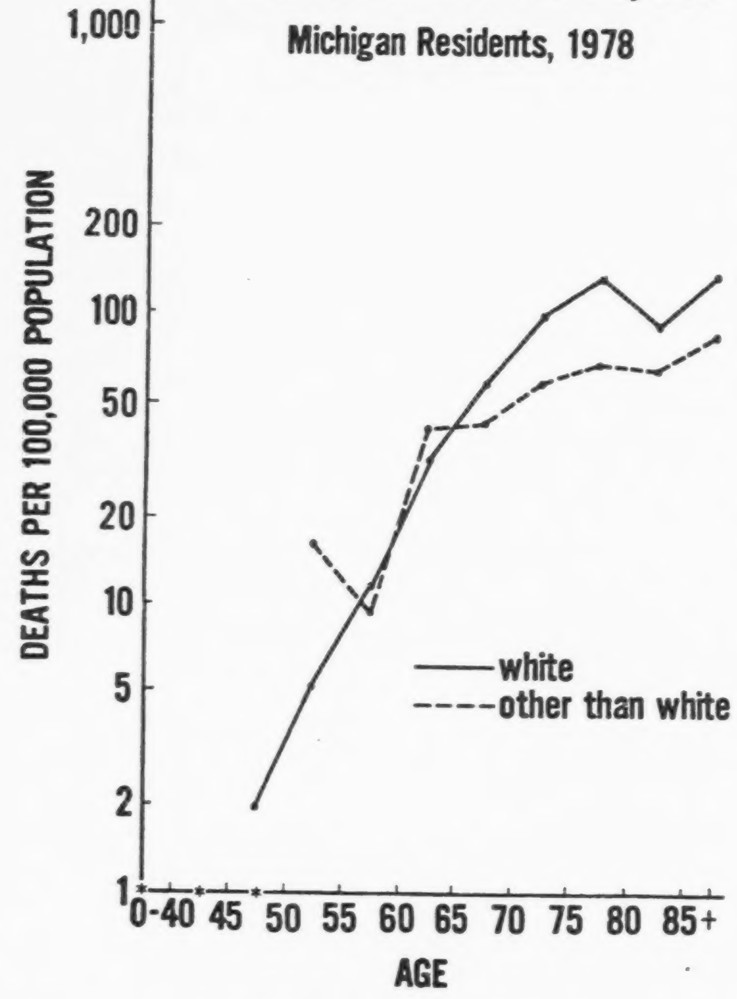
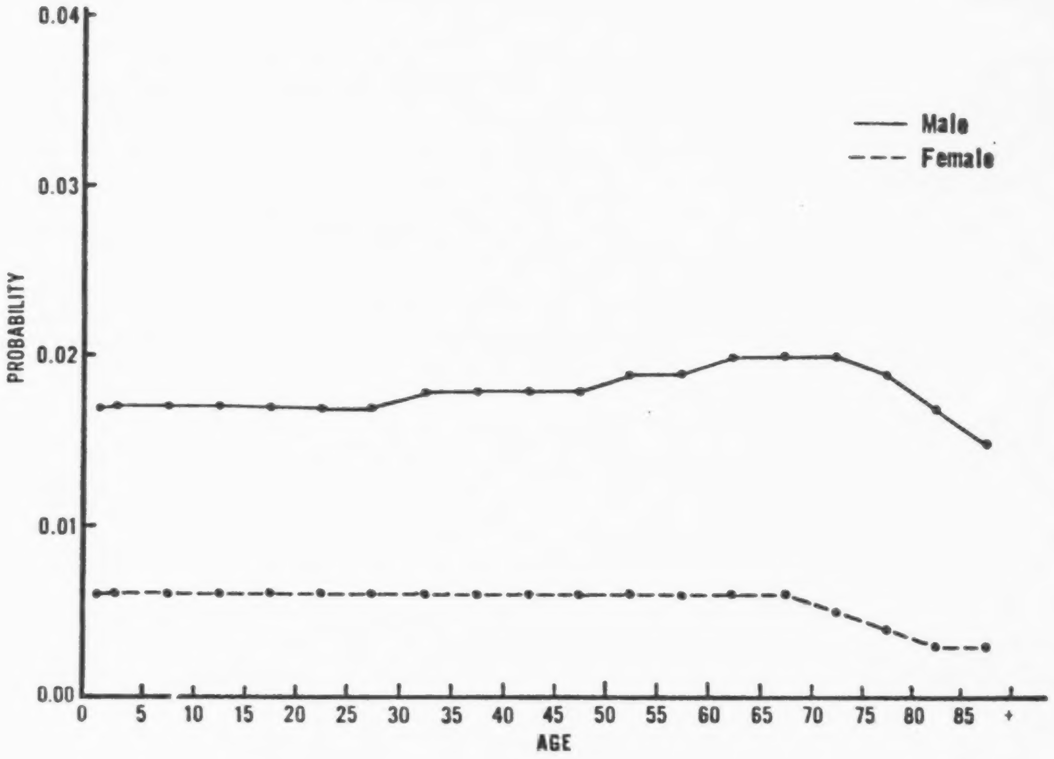
[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

Figure 2.53 Age-Specific Chronic Obstructive Lung Disease Death Rates[1] by Race Michigan Residents, 1978



[1] Note that death rates are shown on a logarithmic scale: vertical distances represent relative differences in rate rather than absolute differences.

FIGURE 2.54 Probability of Eventually Dying from Chronic Obstructive Lung Disease by Age and Sex, Michigan Residents, 1976-1978[1]



[1] Note: Should comparisons be desired between this graph and a similar graph contained herein that pertains to some other specified cause of death, differences in scale may be encountered.

Infant Death

Of the 74,773 deaths occurring to Michigan residents in 1978, 1931 occurred to individuals less than one year of age. The frequency of infant deaths in Michigan has declined by 44 percent since 1968 when there were 3,438 such deaths (Table 2.59). The number of infant deaths has declined steadily since 1957 with the single exception of 1970. The 1978 figure was 0.7 percent below the number for 1977. Nationally, the number of infant deaths in 1978 was 45,300 (provisional), 40.6 percent below the number in 1968 and 3.6 percent less than 1977.

The rate of death for infants under the age of one year has dropped considerably since 1900. In that year there were 157.1 infant deaths for every 1,000 live births. This means that about 16 of every 100 infants did not survive their first year. This rate fell below 100 by 1914 (96.8), to less than 70 by 1927 (67.7), and to less than 50 by 1937 (47.8). During the 40's the Michigan infant death rate declined from 40.6 in 1940 to 28.9 in 1949. Relative declines in rate slowed considerably in the 1950's and 1960's. It was not until 1971 that the rate dropped below 20 to 19.5. The rate of decline in the 1970's compares favorably with the rate of decline observed before 1950. In 1978, the Michigan infant mortality rate was 13.9 (Figure 2.55).

During the period 1915-1928, the rate for Michigan was above that for the United States 9 of 14 years. From 1929 through 1969, Michigan's infant death rate was consistently below the national statistic. Since 1970, the infant mortality rate in Michigan has been slightly higher than the rate for the nation. The rate for the United States in 1978 was 13.6 (provisional).

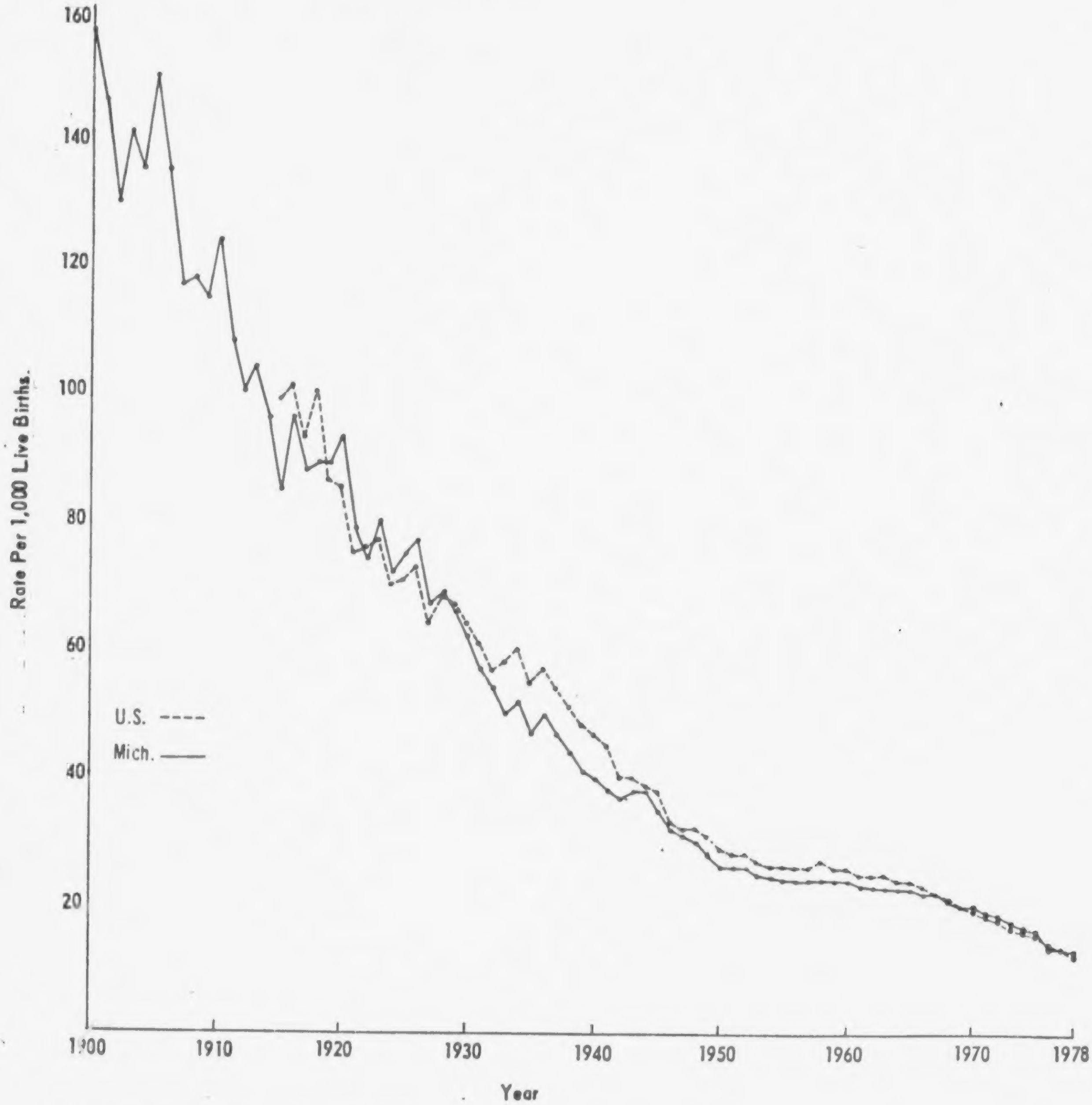
There are three subclassifications of infant death:

Deaths Under 1 Day	717 in 1978
Deaths Under 7 Days	1,101 in 1978
Deaths Under 28 Days	1,281 in 1978
Total Infant Deaths (Under 1 Year)	1,931 in 1978

TABLE 2.59 - Infant Deaths and Infant Mortality Rates, Michigan and United States Residents, 1968-1978

UNITED STATES		YEAR	MICHIGAN	
NO.	RATE		NO.	RATE
76,263	21.8	1968	3,438	21.6
75,073	20.9	1969	3,356	20.2
74,667	20.0	1970	3,492	20.3
67,981	19.1	1971	3,157	19.5
60,182	18.5	1972	2,801	19.1
55,581	17.7	1973	2,561	18.1
52,776	16.7	1974	2,387	17.4
50,525	16.1	1975	2,205	16.5
48,265	15.2	1976	1,978	15.1
46,975	14.1	1977	1,945	14.1
45,300 Pr	13.6 Pr	1978	1,931	13.9

FIGURE 2.55.—Infant Mortality Rates, Michigan Residents, 1900-1978 and United States Residents,[1] 1915-1978



1 - United States rate for 1978 is promisional.

About 66 percent of all infant deaths occurred within the first month of life in 1978, with about 57 percent in the first week. These percentages were 77 and 71 percent in 1970. A review of Table 2.60 reveals that the 31.6 percent decline in infant mortality rate since 1970 stems largely from reductions in the rate of death for those less than 7 days of age. The death rate for infants during their first day of life has declined 35.1 percent since 1970, while the death rate for ages 1 through 6 days has declined by 56.6 percent over the last eight years. In contrast, the death rate for infants aged 7 to 27 days actually increased in the mid-1970's before dropping in 1978 to about the 1970 level. Death rates for infants aged 28 to 365 days fell in 1976 and 1977 but increased in 1978 to about the same level as observed in 1970.

Infant mortality rates have varied considerably by race. Rates for white and other than white infants since 1950 are graphically displayed in Figure 2.56. Rates for other than white infants were higher throughout the period. Although the rates for both race groups have declined, those for white infants have decreased by a relatively larger amount. As a result, the racial differential in infant mortality rates has increased since 1950. Between 1950 and 1965, the infant mortality rate for white infants declined moderately while that for other than white infants remained relatively stable. Between 1965 and 1970 the rate for white infants declined by 14.7 percent while the rate for other than white infants declined by 20.5 percent. Since 1970, however, the rate for white infants has dropped by 36 percent while for other than white infants the decline was 20 percent. The rate for other than white infants of 35.6 in 1950[1] was 40 percent higher than that for white infants (25.4) whereas in 1978 the rate for other than white infants of 23.7 was 100 percent higher than that for white infants (11.8).

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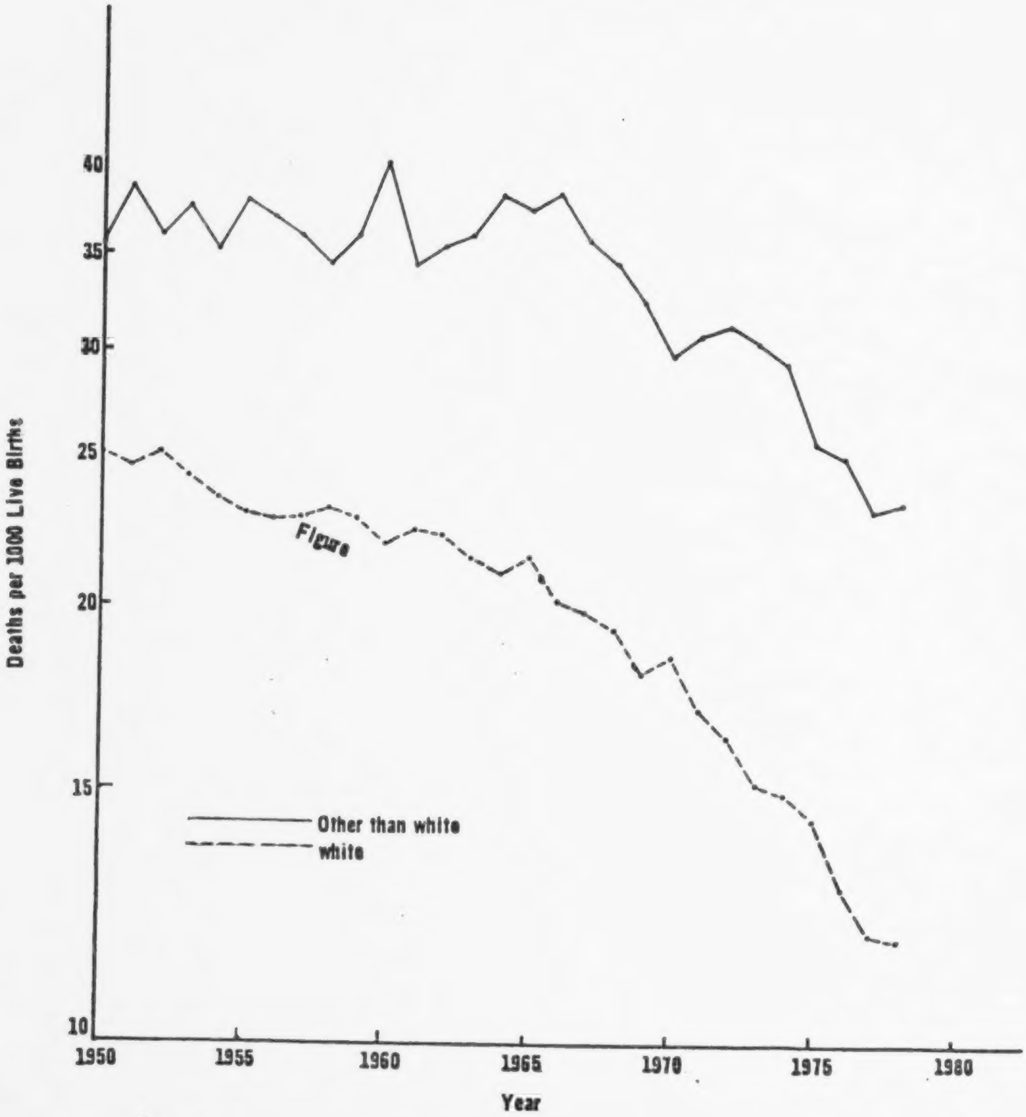
[1] Rates for other than whites for 1950-1969 based on deaths of unknown race as well as deaths of races other than white.

TABLE 2.60 - Infant Deaths and Mortality Rates by Age at Death, Michigan Residents, 1970 - 1978

	AGE AT DEATH									
	TOTAL INFANT DEATHS		UNDER 1 DAY		1 to 6 DAYS		7 to 27 DAYS		28 to 365 DAYS	
YEAR	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1970	3,492	20.34	1,367	7.96	1,095	6.38	221	1.29	809	4.71
1971	3,157	19.46	1,191	7.34	1,025	6.32	196	1.21	745	4.59
1972	2,801	19.07	1,024	6.97	906	6.17	185	1.26	686	4.67
1973	2,561	18.09	1,131	7.99	579	4.09	192	1.36	659	4.66
1974	2,387	17.37	940	6.84	569	4.14	225	1.64	653	4.75
1975	2,205	16.46	856	6.39	461	3.44	246	1.84	642	4.79
1976	1,978	15.06	829	6.31	402	3.06	193	1.47	554	4.22
1977	1,945	14.05	794	5.74	374	2.70	199	1.44	578	4.18
1978	1,931	13.91	717	5.17	384	2.77	180	1.30	650	4.68

FIGURE 2.56 Infant Death Rates[1] by Race,[2] Michigan Residents, 1950-1978



[1] Note that death rates are shown on a Logarithmic scale: vertical distances represent relative difference in rate rather than absolute differences.

[2] Other than white rates for 1950-1969 are based on deaths of unknown race as well as deaths of races other than white.

Infant mortality rates by detailed race are presented in Table 2.61. These data are from a file of merged live birth and infant death information. The rates presented are for Michigan residents born in 1977. Note that this matched file is approximately 98 percent complete and, therefore, the rates presented are understated. The rate for black infants was 24.0, more than twice that for white infants (11.8). The rate of 20.9 for American Indians was also considerably higher than for white infants while the rate for other races (11.9) was about the same. The death rate for infants aged less than seven days showed similar variations by race. Rates for American Indians (13.9) and blacks (13.7) were about 90 percent higher than for whites (7.2) (Table 2.62).

TABLE 2.61 -Infant Deaths, Live Births, and Infant Death Rates by Race, Michigan Resident Infants Born in 1977

Race	Infant Deaths	Live Births	Infant Death Rate
All Races	1,921	138,416	13.9
White	1,344	114,042	11.8
Black	557	23,195	24.0
American Indian	9	431	20.9
Other Races	7	586	11.9
Unknown	4	162	*

TABLE 2.62 - Hebdomadal Deaths[1] and Death Rates[2] by Race, Michigan Resident Infants Born in 1977

Race	Hebdomadal Deaths	Hebdomadal Death Rate
All Races	1,156	8.4
White	824	7.2
Black	318	13.7
American Indian	6	13.9
Other Races	5	8.5
Unknown	3	*

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[1] Deaths to infants less than seven days old.

[2] Per 1,000 live births.

Data from the matched file on infant mortality rates by age of mother and race of child are presented in Table 2.63. Infant death rates display a parabolic relationship with mother's age. The rates are highest for infants born to very young mothers. The infant mortality rate of 54.0 for mothers under 15 years old is 4.8 times the rate of 11.2 observed for mothers in the 30-39 age group. The rate of 11.6 for mothers 25-29 is also significantly less than the overall rate of 13.9. The infant mortality rate for mothers over 40 is about the same as that for mothers aged 15-19.

Rates for white and other than white infants generally follow the pattern of association to mother's age, but infant mortality rates for the other than white group are significantly above those for the white group. For babies born in 1977, the rate for other than white infants was twice as high as that for white infants. The rate for other than white infants was higher in each age group. The largest differentials were in the 20-24 and the 40 and over age groups.

Table 2.64 displays the variation in infant death rates according to the number of mother's prenatal visits. The infant death rate for mothers who had no prenatal care was 92.2, over thirteen times as high as the low rate of 6.8 for mothers who had 10 to 14 prenatal visits. The rate associated with mothers who had 1-4 visits was nearly 10 times the low rate while the rate associated with mothers who had 5-9 visits was more than twice as high as the low rate. The infant death rates for mothers with 15-19 and 20 or more prenatal visits were also higher than the low rate, reflecting the likelihood that a high number of prenatal visits is connected with a problem pregnancy.

Mothers with fewer than ten prenatal visits had 33.1 percent of all live births but 60.1 percent of all infant deaths. Mothers who had ten or more prenatal visits had 62.9 percent of live births and 31.6 percent of infant deaths. The infant death rate for mothers who had fewer than ten prenatal visits was 25.2. This is 3.7 times the rate of 6.9 for mothers who had ten or more prenatal visits.

TABLE 2.63 - Infant Deaths, Live Births, and Infant Death Rates by Age of Mother and Race[1] of Infant, Michigan Resident Infants Born in 1977

AGE OF MOTHER	ALL INFANTS			WHITE INFANTS			OTHER THAN WHITE INFANTS		
	INFANT DEATHS	LIVE BIRTHS	INFANT DEATH RATE	INFANT DEATHS	LIVE BIRTHS	INFANT DEATH RATE	INFANT DEATHS	LIVE BIRTHS	INFANT DEATH RATE
All Ages	1,921	138,416	13.9	1,344	114,042	11.8	573	24,212	23.7
Under 15........	23	426	54.0	6	147	40.8	17	279	60.9
15-19 years.....	439	22,585	19.4	266	15,992	16.6	173	6,571	26.3
20-24 years.....	697	49,740	14.0	485	41,191	11.8	212	8,496	25.0
25-29 years.....	502	43,346	11.6	386	37,719	10.2	113	5,580	20.3
30-39 years.....	241	21,471	11.2	189	18,328	10.3	51	3,107	16.4
40 or more years	16	822	19.5	10	648	15.4	6	172	34.9
Unknown age.....	3	26	*	2	17	*	1	7	*

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[1] Race not stated included in total columns only.

TABLE 2.64 - Infant Deaths, Live Births, and Infant Death Rates by Prenatal Visits and Race[1] of Infant, Michigan Resident Infants Born in 1977

NUMBER OF VISITS[2]	ALL INFANTS			WHITE INFANTS			OTHER THAN WHITE INFANTS		
	INFANT DEATHS	LIVE BIRTHS	INFANT DEATH RATE	INFANT DEATHS	LIVE BIRTHS	INFANT DEATH RATE	INFANT DEATHS	LIVE BIRTHS	INFANT DEATH RATE
TOTAL	1,921	138,416	13.9	1,344	114,042	11.8	573	24,212	23.7
0	84	911	92.2	38	560	67.9	46	351	131.1
1 - 4	462	7,035	65.7	299	4,348	68.8	162	2,682	60.4
5 - 9	609	37,812	16.1	433	29,893	14.5	176	7,908	22.3
10 - 14	499	73,843	6.8	409	64,821	6.3	90	9,002	10.0
15 - 19	85	11,157	7.6	65	9,445	6.9	20	1,707	11.7
20 & over	23	2,063	11.1	12	1,616	7.4	11	447	24.6
Unknown	159	5,595	28.4	88	3,359	26.2	68	2,115	32.2

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[1] Race not stated included in total columns only.

[2] Live birth figures are revised.

The differential in mortality rates between other than white and white infants noted above is significantly altered when comparisons are made within the same range of prenatal visits. In the category of 1-4 prenatal visits, the infant mortality rate for other than white infants was slightly lower than for white infants. For mothers with fewer than ten prenatal visits, the infant mortality rate for white infants was 22.1 and that for other than white infants 35.1 For mothers with ten or more prenatal visits, the rate for white infants was 6.4 and for other than white infants 10.8. The rate for other than white infants was 58.8 percent higher where the mother had fewer than ten prenatal visits and 68.8 percent higher where the mother had ten or more visits. Both of these racial differentials were substantially less than the overall racial differential of 100 percent. This seemingly paradoxical result is explained by the differing distributions of the white and the other than white births. The overall infant mortality rate for each race is a weighted sum of the infant mortality rates for the different prenatal care categories. The weight for each prenatal care category is the ratio of the number of live births in that category to the total number of live births. Since a greater proportion of the other than white live births are to mothers in the categories with fewer prenatal visits, the higher infant mortality rates in the categories with fewer prenatal visits are more heavily weightedfor the other than white population.

When deaths under one week are grouped together with fetal deaths the resultant total is called perinatal deaths. By placing a ceiling of six days for the infant component of perinatal deaths, most accidental and environmental causes of death are eliminated. In 1978, Michigan resident perinatal deaths numbered 2,322 and the perinatal death rate was 16.6. This rate was 17.6 in 1977 and 26.0 in 1970.

As with infant death rates, perinatal mortality rates vary considerably with race, age of mother, and number of prenatal visits. Tables 2.65 and 2.66 show perinatal deaths and rates by age of mother, the number of the mother's prenatal visits, and the race of the fetus or infant for fetal deaths and live births occurring in 1977. As with Tables 2.63 and 2.64 a part of the data, i.e., hebdomadal deaths, are drawn from a merged file of birth and death data. As a result, perinatal deaths and rates are slightly understated. Table 2.65 makes clear the increased risk of death to fetuses and infants of mothers under 20 or age 40 or greater. Minimum risk in 1977 was associated with mothers 25-29 years of age. Table 2.66 indicates that the risk of perinatal death is more than ten times as great for fetuses and infants whose mothers had fewer than five prenatal visits compared with mothers with ten or more visits. The risk associated with 5-9 prenatal visits is approximately three times as great as for the lowest risk category.

The overall perinatal mortality rate for other than white fetuses and infants was nearly twice as high as for whites. This differential was generally reduced in the high risk categories. The perinatal mortality rates associated with mothers under 15 years old and with mothers who had 1 to 4 prenatal visits were actually lower for other than whites than for whites. The elevated overall rate for other than whites is the result of a disproportionately large number of births to mothers with few prenatal visits.

Michigan resident infant deaths in 1978 are listed by cause of death classification in Table 2.67. Congenital anomalies caused the death of 347 infants and was the specific disease category most frequently reported. Sudden infant death syndrome was responsible for 252 infant deaths in 1978, while immaturity unqualified was listed as the cause of 152 deaths and hyaline membrane disease as the cause of 147 infant deaths.

TABLE 2.65 - Perinatal Deaths, Total Births, and Perinatal Death Rates by Age of Mother and Race[1] of Infant, Michigan Residents Born in 1977

AGE OF MOTHER	ALL RACES			WHITE			ALL OTHER		
	PERINATAL DEATHS	TOTAL BIRTHS	PERINATAL DEATH RATE	PERINATAL DEATHS	TOTAL BIRTHS	PERINATAL DEATH RATE	PERINATAL DEATHS	TOTAL BIRTHS	PERINATAL DEATH RATE
TOTAL.....	2,444	139,704	17.5	1,706	114,924	14.8	686	24,569	27.9
Under 15..	24	432	55.6	9	150	60.0	15	282	53.2
15-19.....	491	22,835	21.5	298	16,137	18.5	186	6,669	27.9
20-24.....	814	50,148	16.2	564	41,471	13.6	234	8,608	27.2
25-29.....	662	43,699	15.1	515	37,990	13.6	138	5,655	24.4
30-39.....	408	21,710	18.8	287	18,486	15.5	101	3,169	31.9
40 or More	39	850	45.9	29	671	43.2	10	178	56.2
Unknown...	6	30	200.0	4	19	*	2	8	*

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[1] Race not stated included in total column only.

TABLE 2.66 - Perinatal Deaths, Total Births, and Perinatal Death Rates by Prenatal Visits and Race[1], Michigan Residents Born in 1977

NUMBER OF VISITS[2]	ALL RACES			WHITE			All Other		
	PERINATAL DEATHS	TOTAL BIRTHS	PERINATAL DEATH RATE	PERINATAL DEATHS	TOTAL BIRTHS	PERINATAL DEATH RATE	PERINATAL DEATHS	TOTAL BIRTHS	PERINATAL DEATH RATE
TOTAL.....	2,444	139,704	17.5	1,706	114,924	14.8	686	24,569	27.9
0	110	960	114.6	47	578	81.3	62	381	162.7
1 - 4	545	7,232	75.4	361	4,467	80.8	182	2,759	66.0
5 - 9	740	38,195	19.4	521	30,152	17.3	211	8,024	26.3
10 - 14	493	74,113	6.7	394	65,028	6.1	98	9,064	10.8
15 - 19	98	11,212	8.7	72	9,483	7.6	24	1,722	13.9
20 & over	30	2,081	14.4	21	1,630	12.9	9	451	20.0
Unknown...	428	5,911	72.4	290	3,586	80.9	100	2,168	46.1

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[1] Race not stated included in total column only.

[2] Total birth figures are revised.

TABLE 2.67 - Infant Deaths by Cause of Death, Michigan Residents,

ICDA LIST NUMBER/S	CAUSE OF DEATH	FREQUENCY
740-759	Congenital Anomalies	347
795.0	Sudden Infant Death Syndrome	252
777	Immaturity Unqualified	152
776.1	Hyaline Membrane Disease	147
776.2	Respiratory Distress Syndrome	125
776.9	Asphyxia of Newborn	115
Residual 000-136	Other Infective and Parasitic Diseases	67
764-768 (.0-.3), 772	Birth Injuries	58
E800-E949	Accidents	50
470-474,480-486	Influenza and Pneumonia	47
390-398, 402, 404, 410-429	Heart Disease	40
320	Meningitis	21
008-009	Enteritis and Other Diarrheal Diseases	20
550-553, 560	Hernia and Intestinal Obstruction	12
E960-E978	Homicide	10
140-209	Malignant Neoplasms	6
466	Acute Bronchitis and Bronchiocitis	6
430-438	Cerebrovascular Disease	5
210-239	Benign Neoplasms	4
580-584	Nephritis and Nephrosis	2
E980-E999	All Other External Causes	4
Residual 760-778	Other Diseases of Early Infancy	341
	All Other Diseases	100
	TOTAL	1,931

The vast majority of infant deaths are attributable to causes restricted to the fetus and newborn, but there still remain other major causes of death, particularly in three areas: (1) infective and parasitic diseases; (2) respiratory diseases; and (3) accidents. Influenza and pneumonia deaths numbered 47, while accidental deaths numbered 50. There were 10 homicides involving infants in 1978.

The median birth weight of infants born in 1977 and dying prior to 1 year of age was 1,588 grams (Table 2.68). The median birth weight of all Michigan resident live births in 1977 was 3,374 grams. For all maternal age groups, the median birth weight for infant deaths was below what is considered a normal weight range.

Communicable Disease Deaths

Although comprising a smaller proportion of deaths than they have in the past, communicable disease deaths continue to be a major concern to public heatlh professionals. Deaths due to such diseases as diptheria, scarlet fever, streptococcal sore throat, small pox, typhoid fever, measles, poliomyelitus and others have been virtually eliminated not only in Michigan, but across the nation. Table 4.7 illustrates trends in deaths from the major communicable diseases.

In 1978, deaths from all infective and parasitic diseases numbered 629. As can be observed from Table 2.69, the three major causes of death in this group were septicemia (298 deaths), tuberculosis (80 deaths), and diarrheal disease (59 deaths).

The distribution of infective and parasitic disease deaths by age, race, and sex for 1978 is given in Table 2.70. Of particular importance is the fact that infants accounted for 13.8 percent of all infective and parasitic disease deaths while comprising just 2.6 percent of all deaths. Note also that other than white persons accounted for 27.3 percent of all infective and parasitic disease deaths but only 12.7 percent of deaths from all causes.

TABLE 2.68 - Infant Deaths by Birth Weight and Mother's Age, Michigan Resident Infants Born in 1977

BIRTH WEIGHT IN GRAMS	Total	MOTHER'S AGE						
		Under 15	15-19	20-24	25-29	30-39	40 or More	Not Stated
Total	1,921	23	439	697	502	241	16	3
500 or Less..........	170	3	28	55	55	27	2	-
501-1,000............	500	10	123	180	125	61	1	-
1,001-1,500..........	251	3	69	79	66	33	1	-
1,501-2,000..........	121	2	28	37	36	17	1	-
2,001-2,500..........	145	1	29	52	39	23	1	-
2,501-3,000..........	241	2	60	97	56	23	3	-
3,001-3,500..........	279	1	68	113	68	27	2	-
3,501-4,000..........	140	1	25	54	34	22	4	-
4,001-4,500..........	38	-	5	12	15	6	-	-
4,501 and Over........	17	-	1	10	4	1	1	-
Not Stated............	19	-	3	8	4	1	-	3
Median Weight in Grams	1,588	907	1,474	1,956	1,531	1,418	*	*

TABLE 2.69 - Deaths From Selected Infective and Parasitic Diseases
Michigan Residents, 1978

ICDA LIST NUMBER	CAUSE OF DEATH	FREQUENCY
038	Septicemia	298
010-019	Tuberculosis	80
009	Diarrheal Disease	59
110-117	Mycoses	26
036	Meningococcal Infections	16
070	Infectious Hepatitis	13
135	Sarcoidosis	12
039.0	Gas Gangrene	8
040-046	Poliomyelitus and Other Enterovirus Diseases of the Central Nervous System	8
062-066	Viral Encephalitis	7
054	Herpes Simplex	6
008	Enteritis	5
090-099	Syphilis and Other Venereal Diseases	5
Residual 000-136	All Other Infective and Parasitic Diseases	86
000-136	Total	629

TABLE 2.70 - Deaths Due to Infective and Parasitic Diseases by Age, Race, and Sex, Michigan Residents, 1978[1]

Age	Total	White Male	White Female	Other Than White Male	Other Than White Female
All Ages	629	248	207	103	69
Under 1 Year	87	32	24	21	10
1-19 Years	38	12	19	3	3
20-44 Years	58	31	14	14	9
45-64 Years	129	51	31	19	18
65 and Over Years	317	122	119	46	29

[1] Deaths of two females of unknown race included only in total column.

Injury at Work

There were 256 deaths reported as resulting from injuries at work in 1978. These include all cases in which the underlying cause of death was external and the injury was reported to have occurred at work, whether or not the injury was work-related. Table 2.71 gives the frequency of deaths due to injuries at work by place of occurrence. The most common site was an industrial place or premises, with 82 deaths. Second in frequency were injuries taking place on streets and highways (62 deaths). There were also 41 deaths from injuries at work occurring in public buildings and 16 from injuries taking place on farms.

The most frequent cause of death associated with injuries at work was motor vehicle traffic accidents, involving 50 deaths or 19.5 percent of all such deaths (Table 2.72). The second most common was homicide and purposely inflicted injury, accounting for 42 deaths and 16.4 percent of the total. Accidental falls caused 23 deaths, while being hit by a falling object, colliding with an object, and being caught in or between objects accounted for 13, 11, and 9 deaths respectively. Accidents caused by an electric current accounted for 17 injury at work deaths, while accidental poisoning by gases and vapors was the cause of 10 deaths. There were also 11 suicide deaths which occurred at work.

Life Expectancy

The life expectancy of a Michigan resident at birth is 72.9 years, based on 1978 mortality data and population estimates. Males demonstrated a significantly shorter longevity than females. In 1978 the years remaining at birth are 69.6 for males and 76.4 for females. This results from the higher mortality rates of males at all ages.

Life expectancies by sex in selected years for Michigan and United States residents are presented in Table 2.73. It can be seen that longevity has increased greatly in Michigan since 1901, about 16 years for males and about 21 years for females. Females born in Michigan in 1901 could expect to live 1.7 years longer than their male counterparts. By 1950 the differential in life expectancy between the sexes was 5.5 years.This disparity increased to 7.6 years by 1971, remained constant

TABLE 2.71 - Deaths Due to Injury At Work by Place of Injury Michigan Residents - 1978

PLACE	NUMBER OF DEATHS
Industrial Place and Premises	82
Street and Highway	62
Public Building	41
Farm	16
Home	5
Resident Institution	2
Place for Recreation and Sport	2
Mine and Quarry	1
Other Specified Places	40
Place Not Specified	5
Total	256

TABLE 2.72 - Deaths Due to Injury at Work by Cause of Death, Michigan Residents, 1978

ICDA List No.	Cause of Death	No. of Deaths	Percent
E810-E819	Motor Vehicle Traffic Accidents	50	19.5
E960-E969	Homicide and Injury Purposely Inflicted by Other Person	42	16.4
E880-E887	Accidental Falls	23	9.0
E925	Accident Caused by Electric Current	17	6.6
E916	Struck Accidentally by Falling Object	13	5.1
E917	Striking Against or Struck Accidentally by Objects	11	4.3
E950-E959	Suicide and Self-Inflicted Injury	11	4.3
E870-E877	Accidental Poisoning by Gases and Vapors	10	3.9
E929	Other and Unspecified Accidental Deaths	10	3.9
E918	Caught Accidentally in or Between Objects	9	3.5
E820-E823	Motor Vehicle Nontraffic Accidents	8	3.1
E890-E899	Accidents Caused by Fires and Flames	8	3.1
E928	Machinery Accidents Not Elsewhere Classifiable	8	3.1
E840-E845	Air and Space Transport Accidents	6	2.3
E927	Vehicle Accidents Not Elsewhere Classifiable	6	2.3
E910	Accidental Drowning and Submersion	4	1.6
E800-E807	Railway Accidents	3	1.2
E900-E909	Accidents Due to Natural and Environmental Factors	3	1.2
E923	Accidents Caused by Explosive Material	3	1.2
E830-E838	Water Transport Accidents	2	0.8
E922	Accidents Caused by Firearm Missiles	2	0.8
E924	Accidents Caused by Hot Substance, Corrosive Liquid, and Steam	2	0.8
E980-E989	Injury Undetermined Whether Accidentally or Purposely Inflicted	2	0.8
E911	Inhalation and Ingestion of Food Causing Obstruction or Suffocation	1	0.4
E913	Accidental Mechanical Suffocation	1	0.4
E921	Accident Caused by Explosion of Pressure Vessel	1	0.4
	TOTAL	256	100.0

TABLE 2.73 - Life Expectancy at Birth by Sex, Michigan and United States Residents, Selected Years, 1901-1978

UNITED STATES			MICHIGAN	
MALE LIFE EXPECTANCY	FEMALE LIFE EXPECTANCY	YEAR	MALE LIFE EXPECTANCY	FEMALE LIFE EXPECTANCY
47.6	50.6	1901	53.4	55.1
48.4	51.8	1910	53.9	56.2
53.6	54.6	1920	55.1[1]	56.0[1]
58.1	61.6	1930	59.8[1]	62.8[1]
60.8	65.2	1940	63.4[1]	67.4[1]
65.6	71.1	1950	65.7	71.2
66.6	73.1	1960	67.1	73.3
67.1	74.8	1970	67.2	74.6
67.4	75.0	1971	67.3	74.9
67.4	75.1	1972	67.3	74.9
67.6	75.3	1973	67.4	75.0
68.1	75.8	1974	68.0	75.3
68.7	76.5	1975	68.5	75.7
69.0	76.7	1976	69.0	75.9
69.3	77.1	1977	69.3	76.3
- - -	- - -	1978	69.6	76.4

[1] Michigan data for years 1920, 1930, and 1940 are for white persons only.

through 1973, and by 1978 had declined to 6.8 years.

The life expectancy of Michigan residents was well above that for the nation in 1901, but this differential had virtually disappeared by 1950. In 1977 the life expectancy of males in Michigan was the same as for males nationwide, while longevity for females residing in this state was 0.8 years below the average for the country. Note that females have consistently demonstrated greater longevity than males both in Michigan and the United States.

White persons displayed a life expectancy 5.0 years greater than other than white persons in 1978. White males can be expected to live 5.3 years longer than males of other races in 1978 compared to a differential of 5.8 years in 1950 (Table 2.74). In 1970 the differential was 7.2 years, due in part to an actual reduction in life expectancy for other than white males between 1960 and 1970. Since 1970 life expectancy for other than white males has increased 6.6 percent from 61.0 to 65.0 years. This is a reflection of the recent decline in mortality rates for several leading causes of death for this group. The change in the differential between life expectancy for females by race has been much more pronounced. In 1950, Michigan resident white females had an average longevity 8.5 years greater than females of all other races. This disparity declined to 4.9 years in 1978.

The expected number of years of life remaining are presented graphically by age, race, and sex in Figure 2.57. The relative differential between the sexes holds fairly stable throughout life, based upon Michigan resident mortality data and population estimates for 1978. Other than white persons display slightly greater life expectancies in the older age intervals than their white counterparts.

TABLE 2.74 - Life Expectancy at Birth by Sex and Race, Michigan Residents, Selected Years

POPULATION SUBGROUP	YEAR			
	1950	1960	1970	1978
Total Population	68.3	70.0	70.8	72.9
Total Male	65.7	67.1	67.2	69.6
Total Female	71.2	73.3	74.6	76.4
Total White	68.8	70.5	71.6	73.6
White Male	66.2	67.5	68.2	70.3
White Female	71.9	74.0	75.3	77.1
Total All Other	61.8	65.6	65.0	68.6
All Other Male	60.4	63.6	61.0	65.0
All Other Female	63.4	67.7	69.4	72.2

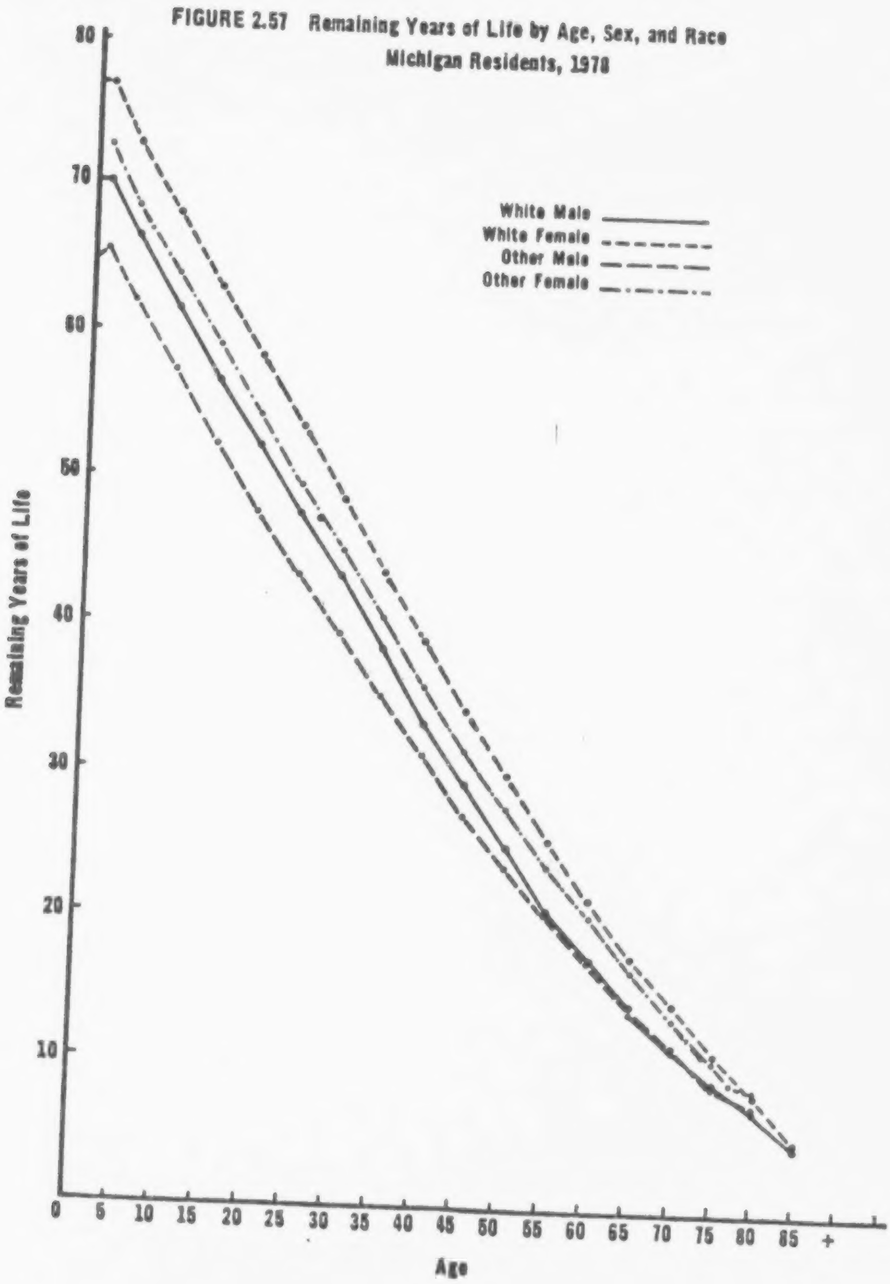


FIGURE 2.57 Remaining Years of Life by Age, Sex, and Race
Michigan Residents, 1978

The average number of years remaining for other than white females surpasses that of white females around age 80. Other than white males displayed a greater expectation than that of white males at age 65 and over.

Place of Occurrence

There were 2,035 Michigan resident deaths in 1978 that occurred outside the state. This represents 2.7 percent of all resident deaths. 539 Michigan resident deaths occurred in the state of Florida in 1978. This is 26.5 percent of all resident out-of-state deaths, more than in any other area. The border areas of Indiana, Ohio, Wisconsin, and Canada accounted for 37.8 percent of all resident deaths outside Michigan. California was the place of occurrence for 3.8 percent of these deaths. Michigan resident deaths occurred in all but one of the 50 states in 1978 (Table 2.75).

Of the non-residents that died in Michigan in 1978, 44.7 percent were from the border areas, 13.8 percent were Floridians and 9.9 percent were from Illinois. Overall, non-residents who did in Michigan represented 43 states and several foreign countries.

TABLE 2.75 - Michigan Resident Deaths Occurring outside Michigan by Place of Occurrence and Death Occurring in Michigan to Non-Michigan Residents by Place of Residence, 1978

GEOGRAPHIC AREA	DEATHS OF RESIDENTS OCCURRING OUTSIDE MICHIGAN		DEATHS OF NONRESIDENTS OCCURRING IN MICHIGAN	
	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL	2,035	100.0	1,095	100.0
Florida	539	26.5	151	13.8
Indiana	243	11.9	102	9.3
Ohio	239	11.7	194	17.7
Wisconsin	211	10.4	144	13.2
California	78	3.8	29	2.6
Canada	77	3.8	50	4.6
Illinois	71	3.5	108	9.9
Other Areas	577	28.4	317	28.9

MARRIAGE & DIVORCE

SECTION III

MARRIAGE AND DIVORCE
AN OVERVIEW 1978

TOTAL MARRIAGES	88,333
TOTAL DIVORCES AND ANNULMENTS	45,029
MARRIAGE RATE [1]	19.2
DIVORCE RATE [1]	9.8
MEDIAN AGE OF THE BRIDE	23
MEDIAN AGE OF THE GROOM	25

[1] Number of persons married or divorced per 1,000 population

The number of marriages and divorces occurring in Michigan has increased considerably since 1900. The frequency of marriage has generally followed the growth of Michigan's population. The smallest number of marriages in the years 1900 to 1978 was 23,295 in 1900, while the largest number was 94,486 in 1973. The number of marriages recorded in 1978 was 88,333, an increase of 2.6 percent over the 1977 figure. The number of divorces and annulments has increased from a low of 2,435 in 1900 to a high of 45,029 in 1978. The number of reported divorces in 1978 was 4.6 percent higher than reported in 1977.

MARRIAGES

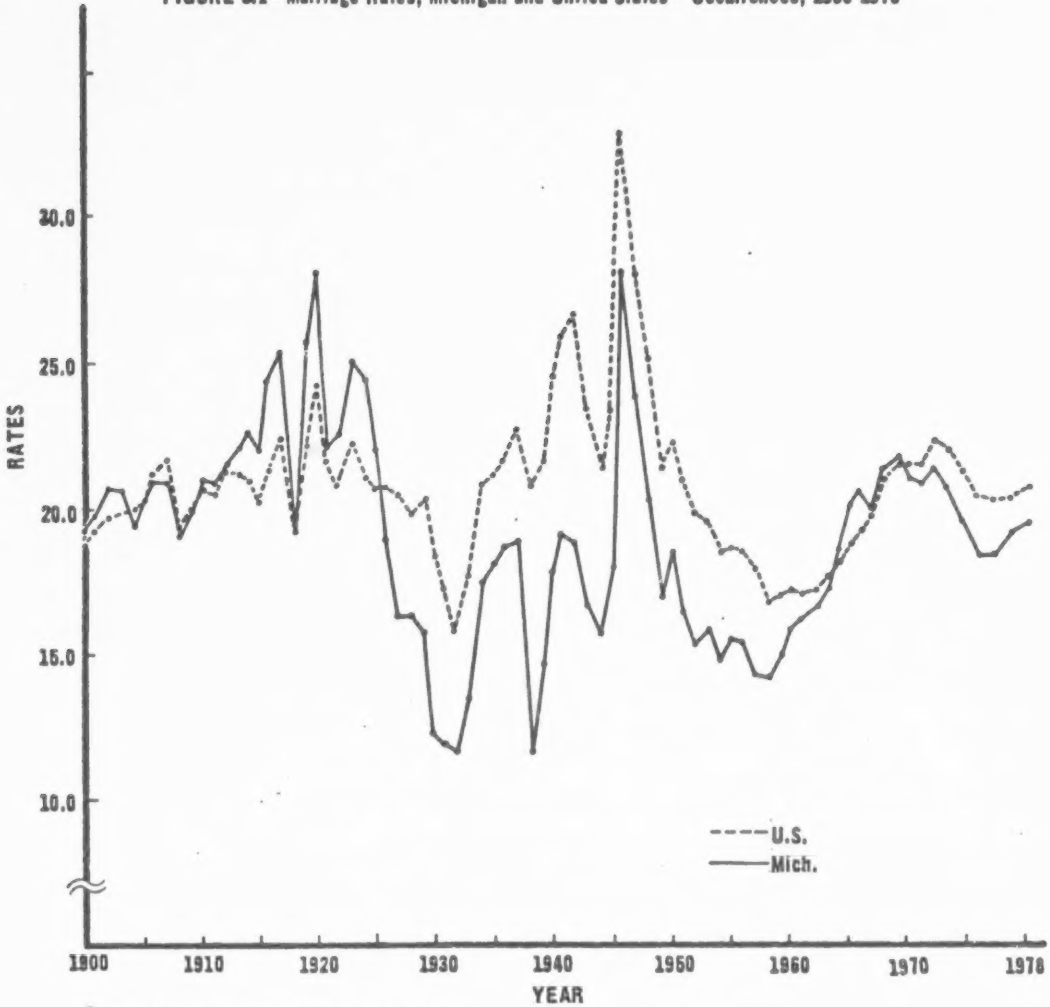
Since 1900, there have been noticeable changes in the marriage rates both nationally and in Michigan (Figure 3.1). The marriage rates observed for the state have generally followed the pattern of rising and falling rates observed nationally. Strong historic shifts in rates have been related most notably to the factors of war and the economy. The number of persons married each year per 1,000 population was higher in Michigan than in the country for 19 of the 26 years from 1900 through 1925. Since 1926, Michigan's marriage rate has been lower than that of the nation, excepting only 1964 through 1969. The marriage rate for Michigan in 1978 was 19.2, 1.6 percent above the 1977 rate of 18.9 (Table 3.1).

Residence of Couples Marrying in Michigan

When presenting statistics of births, deaths and fetal deaths it is possible to provide total resident figures due to an interstate agreement for exchange of nonresident event information. Thus, should a Michigan resident give birth in some other state, the state will forward the information to Michigan. No such agreement exists for marriages. This is an important consideration when analyzing marriage statistics. The marriage data presented are drawn from all marriages performed in the state regardless of the couples' residence.

Table 3.2 indicates that, in general, most of the couples marrying in Michigan are residents of the state. The table also relates that this pattern has not changed markedly

FIGURE 2.1 - Marriage Rates, Michigan and United States[1] Occurrences, 1900-1978



[1] United States rate for 1978 is Provisional.

TABLE 3.1 - Marriages and Marriage Rates,[1] Michigan and United States Occurrences, Selected Years, 1920-1978

UNITED STATES		YEAR	MICHIGAN	
NUMBER	RATE		NUMBER	RATE
1,274,476	23.9	1920	50,805	27.7
1,126,856	18.3	1930	29,482	12.2
1,595,879	24.2	1940	46,342	17.6
1,667,231	22.1	1950	58,180	18.3
1,523,000	17.0	1960	61,090	15.6
1,548,000	16.9	1961	63,320	16.0
1,577,000	17.0	1962	65,002	16.4
1,654,000	17.5	1963	68,160	17.0
1,725,000	18.0	1964	73,911	18.2
1,800,000	18.6	1965	81,247	19.8
1,857,000	19.0	1966	83,903	20.2
1,927,000	19.5	1967	84,363	19.6
2,069,000	20.7	1968	90,984	21.0
2,145,000	21.2	1969	93,392	21.4
2,158,802	21.2	1970	91,933	20.7
2,190,481	21.2	1971	92,134	20.5
2,282,154	22.0	1972	94,447	21.0
2,284,108	21.8	1973	94,486	20.9
2,229,667	21.0	1974	88,023	19.3
2,152,662	20.2	1975	82,856	18.1
2,154,807	20.0	1976	82,753	18.2
2,178,367	20.1	1977	86,088	18.9
2,243,000 Pr.	20.6 Pr.	1978	88,333	19.2

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[1] Number of persons married per 1,000 population

TABLE 3.2 - Marriages by Residence Status of Bride and Groom Michigan Occurrences, 1968 and 1978

RESIDENCE STATUS	1968		1978	
	NUMBER	PERCENT	NUMBER	PERCENT
Both Bride and Groom Residents.......	78,984	86.8	83,035	94.0
Bride Resident, Groom Non-Resident...	3,786	4.2	2,954	3.3
Groom Resident, Bride Non-Resident...	1,075	1.2	651	0.7
Both Bride and Groom Non-Residents...	5,071	5.6	1,692	1.9
Residence Status, Unknown...	2,068	2.3	1	0.0
Total.............................	90,984	100.1	88,333	99.9

over the last decade, although the proportion of marriages where both the bride and groom are not residents has declined substantially. These data indicate that the general characteristics of marriages occurring in Michigan should be representative of marriage patterns for Michigan residents.

There were a total of 2,343 non-resident brides married in Michigan in 1978. The figure for grooms is almost double that of brides, numbering 4,646. Table 3.3 shows the ten most frequent residences of non-resident brides and grooms married in Michigan. The nearby states of Illinois, Indiana, Ohio and Wisconsin are the states of residence for 43 percent of all non-resident grooms and 54 percent of non-resident brides.

Age at Marriage

Examination of the data in Table 3.4 reveals that females generally marry at a younger age than do males. More than twice the number of eligible females marry under the age of 20 compared to their eligible male counterparts. For persons ages 20 and over, eligible males marry more frequently than females, particularly in the 25 and over age groups. In 1978 the median age of brides marrying in Michigan was 23 years, while the 50th percentile for grooms was 25.

The marriage rate for females under the age of 20 years is over two and one-half times the comparable rate for males (Table 3.4). Rates of marriage for males are higher than for females in all other age groups. Since 1970, there have been significant declines in the marriage rates for both sexes under the age of 25 years. The largest decline observed is for males under the age of 20 years for whom the marriage rate has dipped 55 percent. Between the ages of 25 and 44 the rates of marriage have increased since 1970 for both sexes, while rates for persons 45 and over have dropped slightly.

Order of Marriage

The data in Tables 3.5 and 3.6 indicate that there is a trend toward older first marriages, and a younger age for remarriages among both males and females. Between 1968 and 1978 the median age at first marriage increased from 20 to 21 for brides and from 22

TABLE 3.3 - Place of Residence of Non-resident Brides and Grooms
Michigan Occurrences, 1978

GEOGRAPHIC AREA	NON-RESIDENT BRIDE	NON-RESIDENT GROOM
California	137	308
Florida	127	248
Illinois	209	436
Indiana	360	514
Minnesota	73	120
New York	72	173
Ohio	380	632
Texas	56	179
Wisconsin	315	425
Other U.S. Places	522	1,345
Foreign Countries	92	266
Total	2,343	4,646

TABLE 3.4 - Number of Marriages and Marriage Rates[1] by Age and Sex, Michigan Occurrences, 1970 and 1978

AGES	MALES			FEMALES		
	NO. MARRIAGE 1978	RATE 1978	RATE 1970	NO. MARRIAGE 1978	RATE 1978	RATE 1970
Under 20[2]	8,303	17.6	38.9	21,127	44.8	77.6
20-24	35,113	93.3	126.7	34,824	88.2	93.8
25-34	28,804	48.9	36.1	21,302	31.7	22.1
35-44	8,471	16.3	12.7	6,169	13.8	9.7
45 and Over	7,642	5.9	6.6	4,908	3.4	4.4
Not Stated	-	000	000	3	000	000
Total	88,333	19.5	21.1	88,333	18.9	20.3
Median Age	25	000	000	23	000	000

[1] Number of persons married per 1,000 population

[2] 15-19 Population used to obtain rate.

TABLE 3.5 - Age at First Marriage and Remarriage: Bride, Michigan Occurrences, 1968 and 1978

AGES	1968				1978			
	TOTAL	FIRST MARRIAGE	RE-MARRIAGE	NOT STATED	TOTAL	FIRST MARRIAGE	RE-MARRIAGE	NOT STATED
Under 20.......	33,698	31,536	557	1,605	21,127	20,858	229	40
Percent......	37.0	46.3	2.7	76.7	23.9	34.2	0.8	40.8
20-24..........	34,364	30,346	3,813	205	34,824	30,356	4,431	37
Percent......	37.8	44.6	18.3	9.8	39.4	49.8	16.2	37.8
25-29..........	8,138	4,235	3,826	77	14,357	7,412	6,928	17
Percent......	8.9	6.2	18.4	3.7	16.3	12.2	25.4	17.3
30-34..........	3,754	972	2,729	53	6,945	1,469	5,476	-
Percent......	4.1	1.4	13.1	2.5	7.9	2.4	20.1	-
35-44..........	5,169	633	4,459	77	6,169	583	5,584	2
Percent......	5.7	0.9	21.5	3.7	7.0	1.0	20.5	2.0
45 and Over....	5,851	371	5,404	76	4,908	277	4,629	2
Percent......	6.4	0.5	26.0	3.6	5.6	0.5	17.0	2.0
Not Stated.....	10	2	8	-	3	1	2	-
Percent......	0.0	0.0	0.0	-	0.0	0.0	0.0	-
Total..........	90,984	68,095	20,796	2,093	88,333	60,956	27,279	98
Percent......	99.9	99.9	100.0	100.0	100.1	100.1	100.0	99.9
Median Age at Last Birthday	21	20	34	18	23	21	32	20

TABLE 3.6 - Age at First Marriage and Remarriage: Groom, Michigan Occurrences, 1968 and 1978

AGES	1968				1978			
	TOTAL	FIRST MARRIAGE	RE-MARRIAGE	NOT STATED	TOTAL	FIRST MARRIAGE	RE-MARRIAGE	NOT STATED
Under 20.......	17,162	15,661	65	1,436	8,303	8,267	27	9
Percent......	18.9	23.0	0.3	68.6	9.4	14.1	0.1	9.5
20-24.........	40,171	37,847	2,032	292	35,113	32,900	2,161	52
Percent......	44.2	55.6	9.8	13.9	39.8	55.9	7.3	54.7
25-29..........	13,844	9,988	3,754	102	19,510	13,026	6,466	18
Percent......	15.2	14.7	18.0	4.9	22.1	22.2	22.0	18.9
30-34..........	5,405	2,316	3,031	58	9,294	2,996	6,291	7
Percent......	5.9	3.4	14.6	2.8	10.5	5.1	21.4	7.4
35-44..........	6,716	1,527	5,097	92	8,471	1,094	7,374	3
Percent......	7.4	2.2	24.5	4.4	9.6	1.9	25.1	3.2
45 and Over....	7,677	730	6,833	114	7,642	523	7,113	6
Percent......	8.4	1.1	32.8	5.4	8.7	0.9	24.2	6.3
Not Stated.....	9	4	5	-	-	-	-	-
Percent......	0.0	0.0	0.0	-	-	-	-	-
Total..........	90,984	68,073	20,817	2,094	88,333	58,806	29,432	95
Percent......	100.0	100.0	100.0	100.0	100.1	100.1	100.1	100.0
Median Age at Last Birthday	23	22	38	18	25	23	35	23

to 23 for grooms. In the same period, the median age at remarriage dropped from 34 to 32 for brides and from 38 to 35 for grooms. The most frequent age group for first marriage was 20-24 for males in both 1968 and 1978. Among females, the modal age group in 1968 was under 20 years. For brides, data for 1978 indicate a shift in mode to the 20-24 year age group for first marriages. The most frequent age interval for remarriage among males was 45 years of age or older in 1968 and 35-44 years of age in 1978. For females the most frequent age of remarriage shifted from the 45 and over age group in 1968 to the 25-29 age group in 1978.

These changes in age at remarriage are associated with increases in the frequency of second and higher order marriages. In 1968, the percent of all marriages that were remarriages was 23 for both brides and grooms. In 1978 comparable percents were 31 for brides and 33 for grooms. This change in the proportion of all marriages which are remarriages is displayed graphically in Figure 3.2. Between 1960 and 1965, the proportion of remarriages dropped. Since 1965, this proportion has increased. The increase in the period 1972 through 1975 was especially marked for both sexes.

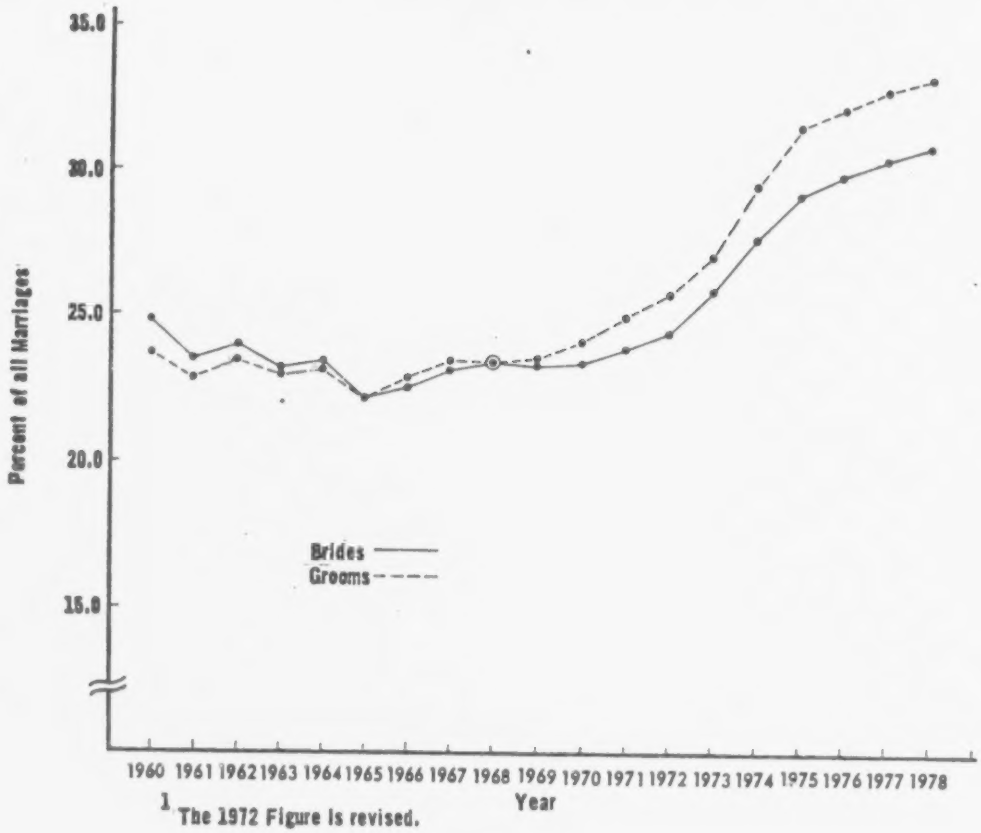
As remarriages can only occur when a prior marriage has been terminated by divorce, annulment or death of a spouse, it is apparent that persons remarrying will be generally older. Tables 3.7 and 3.8 demonstrate that the order of marriage has a strong positive relationship with the age of both brides and grooms. Note, however, the downward shift between 1968 and 1978 in the age distribution for second and higher order marriages for both brides and grooms. The median age at marriage declined during this period for second, third, and fourth and higher order marriages.

First Marriages

First marriages are an interesting component of all marriages in that they constitute an event that can never be duplicated. The frequency of first marriages can not be directly affected by rates of divorce or deaths to married persons and as such reflect the propensity of the population as a whole to enter into marital agreements.

There has been a general decline in both the number and rate of first marriages between 1970 and 1978. The number of first marriages dropped 10.9 percent for women and 13.2 percent for men. The rate of first marriages dropped 13.2 percent for women and 16.7

FIGURE 3.2 - Percent of all Marriages that are Remarriages, Michigan Occurrences, 1960-1978 [1]



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[1] The 1972 Figure is revised.

TABLE 3.7 - Remarriages of Brides by Age and Order of Marriage, Michigan Occurrences, 1968 and 1978

AGES	1968				1978			
	ALL MARRIAGES	SECOND MARRIAGES	THIRD MARRIAGES	4TH OR MORE MARRIAGES	ALL MARRIAGES	SECOND MARRIAGES	THIRD MARRIAGES	4TH OR MORE MARRIAGES
All Ages....	90,984	16,512	3,558	726	88,333	21,850	4,442	987
Under 20....	33,698	551	6	-	21,127	225	4	-
20-24.......	34,364	3,593	212	8	34,824	4,237	186	8
25-29.......	8,138	3,308	470	48	14,357	6,121	732	75
30-34.......	3,754	2,183	468	78	6,945	4,270	1,018	188
35-39.......	2,726	1,696	480	113	3,804	2,376	824	185
40-44.......	2,443	1,493	534	143	2,365	1,475	547	177
45 and Over.	5,851	3,682	1,386	336	4,908	3,144	1,131	354
Not Stated..	10	6	2	-	3	2	-	-
Median Age at last Birthday	21	31	41	44	23	30	36	40

TABLE 3.8 - Remarriages of Grooms by Age and Order of Marriage, Michigan Occurrences, 1968 and 1978

AGES	1968				1978			
	ALL MARRIAGES	SECOND MARRIAGES	THIRD MARRIAGES	4TH OR MORE MARRIAGES	ALL MARRIAGES	SECOND MARRIAGES	THIRD MARRIAGES	4TH OR MORE MARRIAGES
All Ages....	90,984	16,785	3,336	696	88,333	23,490	4,897	1,045
Under 20....	17,162	65	-	-	8,303	27	-	-
20-24.......	40,171	1,987	42	3	35,113	2,109	51	1
25-29.......	13,844	3,415	317	22	19,510	5,916	514	36
30-34.......	5,405	2,553	428	50	9,294	5,197	952	142
35-39.......	3,538	1,993	442	95	5,201	3,270	916	215
40-44.......	3,178	1,945	517	105	3,270	2,115	704	154
45 and Over.	7,677	4,822	1,590	421	7,642	4,856	1,760	497
Not Stated..	9	5	-	-	-	-	-	-
Median Age at Last Birthday	23	35	44	47	25	33	40	43

percent for men. This downward trend in the number and rate of first marriages has not been consistent, however. For men and women, the number and rate of first marriages increased between 1970 and 1972, dropped between 1972 and 1976, and increased again in 1977 and 1978 (Tables 3.9, 3.10, 3.11 and 3.12).

Changes in the frequency of first marriages have varied in different age groups. The greatest decline in first marriages occurred in the under 20 age group for both brides and grooms. The number of first marriages in the under 20 age group dropped by 34 percent for brides and 46 percent for grooms between 1970 and 1978 while the corresponding rate for first marriages dropped 39 percent for brides and 50 percent for grooms. The number and rate of first marriages have also declined for both brides and grooms in the 20-24 age group. There were significant increases in the number and rate of first marriages of brides and grooms aged 25-29. Since 1970 the number of first marriages has declined for persons aged 40 or over. The rate of first marriages has remained stable or increased slightly for brides but decreased for grooms for persons 30 years of age or older. The increase in the overall rate of first marriages between 1976 and 1978 is due to a rise in the rates of first marriages for brides aged 20 through 34 and grooms aged 25 through 34. This is consistent with the general trend since 1970 for 25-29 year old brides and grooms but a shift in trend for the other age intervals.

Age at First Marriage

Age at first marriage declined for both brides and grooms between 1953 and the mid-1960's. This decline was greater for males than for females. Grooms were 34 months older than brides at the median in 1953, 23 months older in 1963 and 20 months older in 1968. During the past dozen years, the median age at first marriage has increased for both males and females, but the increase has been slightly higher for grooms than for brides. As a result, grooms were 22 months older than brides at the median in 1978.

The median age at first marriage in 1978 was 21.2 years (21 years 2 months) for brides and 23.0 years (23 years) for grooms. The 1978 figure was the highest median age at first marriage recorded for brides during the period. The grooms' median age in 1978 was below the median observed during the years 1953-1955 but higher than those recorded in the past 22 years (Figure 3.3).

TABLE 3.9 - First Marriages by Age of Bride
Michigan Occurrences, 1970-1978

AGE OF BRIDE	YEAR								
	1978	1977	1976	1975	1974	1973	1972	1971	1970
All Ages	60,956	59,832	57,860	58,554	63,564	70,076	71,373	70,022	70,317
15-19 Years[1]	20,858	22,341	23,208	24,723	28,238	32,658	33,948	33,227	33,384
20-24 Years	30,356	28,893	27,014	26,604	28,153	30,249	30,771	30,646	30,823
25-29 Years	7,412	6,348	5,634	5,189	5,094	5,036	4,615	4,138	4,079
30-34 Years	1,469	1,377	1,113	1,075	1,108	1,108	1,048	973	995
35-39 Years	418	385	381	422	382	395	403	408	413
40-44 Years	165	173	205	177	204	228	217	221	223
45-49 Years	104	118	126	132	152	154	139	153	158
50 and Over	173	197	177	229	233	247	228	254	238
Not Stated	1	-	2	3	-	1	4	2	4

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[1] Brides under age 15 included in age 15-19.

TABLE 3.10 - First Marriages by Age of Groom, Michigan Occurrences, 1970-1978

AGE OF GROOM	YEAR								
	1978	1977	1976	1975	1974	1973	1972	1971	1970
All Ages	58,806	57,737	55,962	56,655	61,884	68,682	70,120	69,091	69,636
15-19 Years[1]	8,267	9,481	10,206	11,188	13,209	15,468	16,416	16,044	16,865
20-24 Years	32,900	32,269	30,961	31,327	34,283	38,436	39,641	39,692	39,249
25-29 Years	13,026	11,706	10,916	10,336	10,455	10,596	10,048	9,306	9,423
30-34 Years	2,996	2,653	2,288	2,157	2,208	2,289	2,139	2,056	2,130
35-39 Years	797	747	665	680	716	749	759	794	758
40-44 Years	297	324	343	322	339	418	415	454	506
45-49 Years	183	198	226	241	260	314	294	317	295
50 and Over	340	358	355	404	412	412	408	428	410
Not Stated	-	1	2	-	2	-	-	-	-

[1] Grooms under age 15 included in age 15-19.

TABLE 3.11 - First Marriage Rates[1] by Age of Bride, Michigan Occurrences, 1970-1978

AGE OF BRIDE	YEAR								
	1978	1977	1976	1975	1974	1973	1972	1971	1970
All Ages	13.1	12.9	12.5	12.6	13.7	15.2	15.5	15.2	15.5
15-19 Years[2]	44.2	47.1	49.0	52.1	60.2	70.6	75.5	74.0	76.5
20-24 Years	76.8	74.0	69.9	64.9	71.0	77.8	77.5	77.3	82.4
25-29 Years	22.4	19.1	16.4	15.1	15.2	15.3	14.9	13.4	13.6
30-34 Years	4.3	4.2	3.6	3.6	3.8	4.0	4.1	3.8	4.0
35-39 Years	1.6	1.6	1.7	1.8	1.6	1.7	1.7	1.7	1.7
40-44 Years	0.9	0.9	1.1	0.8	0.9	0.9	0.8	0.8	0.8
45-49 Years	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.6
50 and Over	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2

[1] Number of persons married per 1,000 population

[2] Brides under 15 included in age 15-19.

TABLE 3.12 - First Marriage Rates[1] by Age of Groom, Michigan Occurrences, 1970-1978

AGE OF GROOM	YEAR								
	1978	1977	1976	1975	1974	1973	1972	1971	1970
All Ages	13.0	12.8	12.5	12.6	13.8	15.4	15.9	15.7	16.0
15-19 Years[2]	17.6	20.1	21.9	22.6	27.0	32.2	35.8	35.0	38.6
20-24 Years	87.5	88.4	88.6	76.0	91.1	110.8	116.0	116.3	119.4
25-29 Years	53.4	47.4	40.7	39.3	38.1	35.9	33.4	31.0	32.1
30-34 Years	8.7	7.6	6.8	6.8	7.1	7.7	8.6	8.3	8.9
35-39 Years	2.6	2.7	2.6	2.6	2.9	3.1	3.3	3.5	3.3
40-44 Years	1.4	1.6	1.7	1.4	1.4	1.7	1.6	1.8	2.0
45-49 Years	0.8	0.8	0.9	0.9	1.0	1.2	1.1	1.2	1.1
50 and Over	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4

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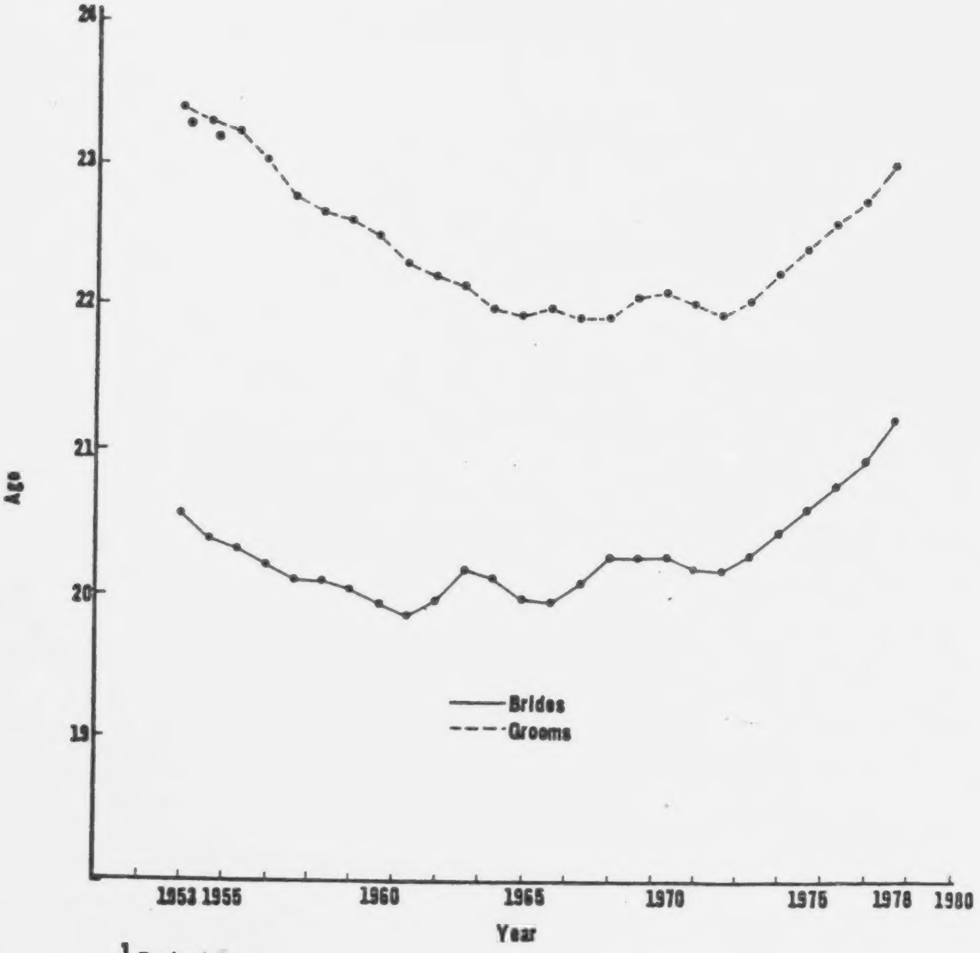
[1] Number of persons married per 1,000 population
[2] Grooms under 15 included in age 15-19

FIGURE 3.3 Median Age[1] at first Marriage by Sex, Michigan Occurrences, 1953-1978



[1] Revised data

DIVORCES AND ANNULMENTS

The number of divorces and annulments increased from 43,036 in 1977 to 45,029 in 1978. This constituted a 4.6 percent increase. The frequency of divorces had declined slightly in 1977, the only such decline recorded in the past fifteen years. The number of divorces occurring nationally increased by an estimated 2.8 percent in 1978, the sixteenth successive year in which this figure has increased. In both Michigan and the United States the number of divorces in 1978 was more than two and one-half times the figure for 1960 (Table 3.13).

The number of persons divorced in Michigan per thousand population increased from 9.4 in 1977 to 9.8 in 1978, while the national rate increased from 10.1 to 10.3. Michigan's divorce rate was higher than that for the United States each year from 1900 through 1947. In the following 31 years the Michigan divorce rate has been at or below the national rate 24 times. The lowest rate in this century for Michigan was 2.0 in the years 1900 and 1901 while the lowest national rate was 1.5 in 1900 and 1902. The highest rate observed in the state was 10.2 in 1946. The provisional United States estimate for 1978 was the highest national rate for the 79 years examined. The 1978 divorce rate for Michigan was higher than that for any other year since 1900, excepting only the rate for 1946 (Table 3.13 and Figure 3.4).

The number of children under 18 of couples dissolving marriages in 1978 was at least 48,510 (Table 3.14). This is a 38.6 percent increase since 1968. The number of children affected by divorce has steadily increased as a proportion of all children. This ratio increased from 6.5 per 1,000 Michigan children in 1960 to 12.6 in 1970 and 16.0 in 1978 (Table 3.15). The average number of children per divorce has, nonetheless, dropped slightly from 1.4 children in 1968 to 1.1 in 1978. The decline primarily reflects a decline in the proportion of divorces involving three or more children. It should be noted that Michigan live birth data indicate that there has been a decline in the relative proportion of women having third or higher order live births over the past decade (Table 1.9). Data for the United States indicate a similar pattern.

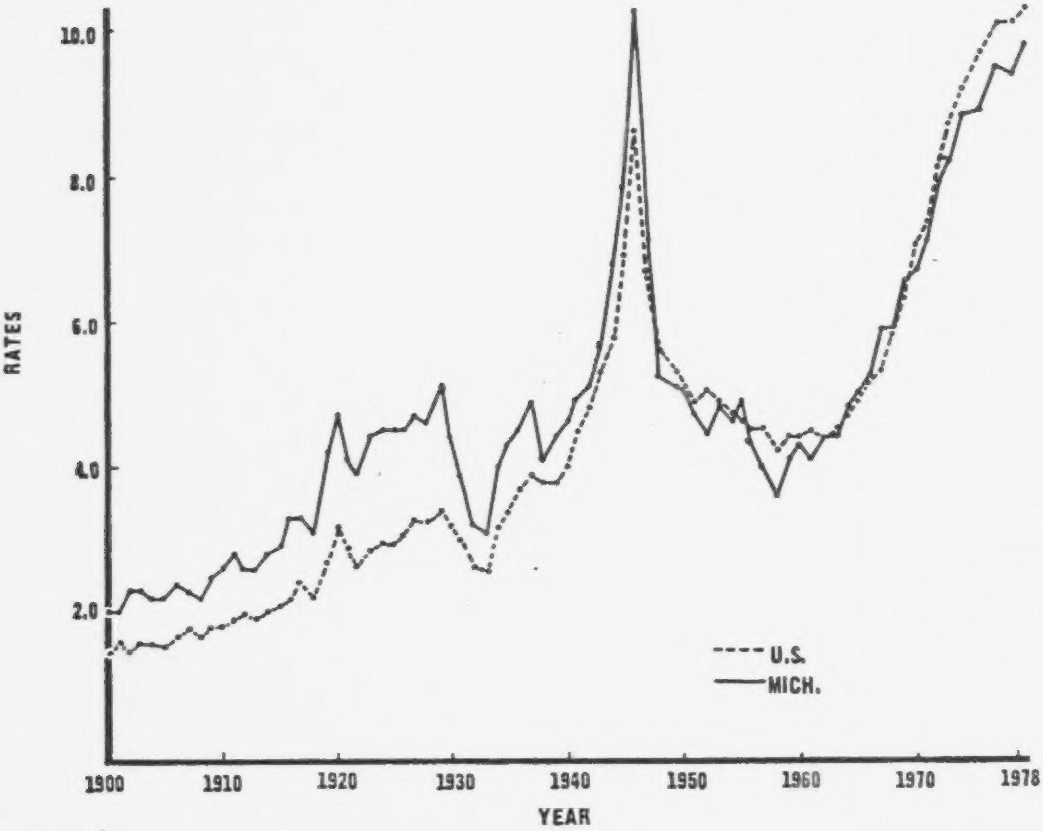
TABLE 3.13 - Number of Divorces and Annulments, and Divorce and Annulment Rates[1], Michigan and United States Occurrences Selected Years, 1920 - 1978

UNITED STATES		YEAR	MICHIGAN	
NUMBER	RATE		NUMBER	RATE
170,505	3.2	1920	8,679	4.7
195,961	3.2	1930	10,639	4.4
264,000	4.0	1940	12,054	4.6
385,144	5.1	1950	15,979	5.0
393,000	4.4	1960	16,656	4.3
414,000	4.5	1961	16,219	4.1
413,000	4.4	1962	17,500	4.4
428,000	4.5	1963	17,479	4.4
450,000	4.7	1964	19,400	4.8
479,000	4.9	1965	20,305	5.0
499,000	5.1	1966	21,727	5.2
523,000	5.3	1967	23,620	5.5
584,000	5.8	1968	25,400	5.9
639,000	6.3	1969	28,347	6.5
708,000	7.0	1970	29,934	6.7
773,000	7.5	1971	31,790	7.1
845,000	8.1	1972	35,505	7.9
915,000	8.7	1973	37,121	8.2
977,000	9.2	1974	39,940[2]	8.8[2]
1,036,000	9.7	1975	40,782	8.9
1,083,000	10.1	1976	43,101	9.5
1,091,000	10.1	1977	43,036	9.4
1,122,000 Pr.	10.3 Pr.	1978	45,029	9.8

[1] Number of persons whose marriages ended in divorce or annulment per 1,000 population

[2] Estimate

FIGURE 3.4 - Divorce Rates, Michigan and United States Occurrences, 1900-1978



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[1] United States rate for 1978 is Provisional

TABLE 3.14 - Divorces and Annulments by Children Under 18 Present, Michigan Occurrences, 1968 and 1978

NUMBER OF CHILDREN	DIVORCES AND ANNULMENTS				PERCENTAGE OF TOTAL DIVORCES	
	1968	ESTIMATED TOTAL CHILDREN (MINIMUM)[1]	1978	ESTIMATED TOTAL CHILDREN (MINIMUM)[1]	1968	1978
Zero..............	9,995	-	18,532	-	39.4	41.2
One...............	5,504	5,504	11,133	11,133	21.7	24.7
Two...............	4,652	9,304	9,273	18,546	18.3	20.6
Three.............	2,736	8,208	3,626	10,878	10.8	8.1
Four..............	1,369	5,476	1,206	4,824	5.4	2.7
Five or More.......	1,144	6,520	576	3,129	4.5	1.3
Not Stated.........	-	-	683	-	-	1.5
Total.............	25,400	35,012	45,029	48,510	100.1	100.1

[1] Total children for marriages involving 8 or more children under 18 is not available.

Table 3.15 - Estimated Number of Children Involved in Divorces and Annulments, Average Number of Children Per Divorce, and Rate Per 1,000 Children Under 18 Years of Age: Michigan and United States, Selected Years 1960 - 1978

MICHIGAN			Year	UNITED STATES		
Estimated Number of Children Involved	Average Number of Children Per Divorce	Rate per 1,000 Under 18 Years of Age		Estimated Number of Children Involved	Average Number of Children Per Divorce	Rate per 1,000 Under 18 Years of Age
19,209	1.15	6.5	1960	463,000	1.18	7.2
40,964	1.37	12.6	1970	870,000	1.23	12.5
43,910	1.38	13.5	1971	946,000	1.22	13.6
46,538	1.31	14.5	1972	1,021,000	1.21	14.8
48,153	1.18	15.4	1975	1,123,000	1.08	16.9
49,555	1.15	15.7	1976	1,117,000	1.03	17.1
47,569	1.11	15.4	1977	1,095,000	1.00	17.0
48,510	1.08	16.0	1978	---	---	---

REFERENCE APPENDIX

SECTION IV

TABLE 4.1

POPULATION: LIVE BIRTHS, DEATHS-ALL AGES, INFANT, NEONATAL, PERINATAL, FETAL, MATERNAL, AND DEATHS DUE TO IMMATURITY, MARRIAGES, AND DIVORCES
MICHIGAN, 1900-1978

(Deaths exclusive of fetal deaths. Perinatal deaths include deaths under 1 week and fetal deaths. Divorces include annulments.)

Year	Population[1]	LIVE BIRTHS	DEATHS							Marriages	Divorces
			All Ages	Under 1 Year	Under[2] 28 Days	Perinatal	Due to[3] Immaturity	Fetal	Maternal		
1900	2,420,982	43,599	32,453	6,866			620	1,325	452	23,295	2,436
1901	2,459,901	43,221	32,834	6,319			524	1,501	531	24,079	2,448
1902	2,498,820	45,546	31,472	5,949			606	1,793	468	25,653	2,828
1903	2,537,739	46,020	33,176	6,486			642	1,814	427	26,029	2,945
1904	2,576,658	47,506	34,494	6,419			632	1,911	436	24,918	2,808
1905	2,615,578	46,976	34,679	7,054			751	2,044	418	26,307	2,825
1906	2,654,497	52,599	37,033	7,952			830	2,358	400	27,519	3,192
1907	2,693,416	55,029	36,701	6,906			855	2,358	391	27,940	3,107
1908	2,732,335	64,772	38,761	7,697			875	2,694	440	25,765	3,020
1909	2,771,254	64,323	35,313	7,443			1,152	2,540	405	27,363	3,618
1910	2,810,173	64,109	38,913	7,998			2,050	2,869	431	29,039	3,718
1911	2,895,997	65,756	38,007	7,131			2,223	2,716	451	29,659	4,125
1912	2,981,821	69,537	38,804	6,985			2,340	2,906	396	31,694	3,838
1913	3,067,645	73,058	40,827	7,659			2,480	2,953	528	33,529	3,978
1914	3,153,469	76,761	39,908	7,431			2,391	3,113	507	35,316	4,395
1915	3,239,293	81,100	40,441	6,943			2,207	3,357	486	35,527	4,757
1916	3,325,116	87,062	46,047	8,415			2,498	3,689	503	40,143	5,640
1917	3,410,940	89,419	47,236	7,916			2,369	3,550	586	42,791	5,827
1918	3,496,764	91,261	54,617	8,197			2,362	3,606	709	33,260	5,493
1919	3,582,588	84,062	45,636	7,560			2,183	3,361	578	45,579	7,460
1920	3,668,412	92,245	51,862	8,587			2,512	3,770	795	50,805	8,679
1921	3,785,799	96,035	44,186	7,584			2,481	3,669	625	41,508	7,676
1922	3,903,186	90,042	43,817	6,730			1,793	3,779	551	43,561	7,591
1923	4,020,573	92,956	49,333	7,477			1,911	3,657	583	49,569	8,745
1924	4,137,960	98,187	47,304	7,088	4,119	6,791	1,970	3,703	636	49,788	9,400
1925	4,255,347	98,583	49,417	7,496	4,022	6,667	1,987	3,670	629	46,276	9,650
1926	4,372,734	98,289	54,080	7,620	4,054	6,773	1,986	3,816	631	39,788	9,795
1927	4,490,121	99,640	50,600	6,766	3,915	6,794	1,911	3,834	667	36,276	10,[illegible]7
1928	4,607,508	97,462	54,755	6,806	3,739	6,594	1,846	3,701	603	37,300	10,615
1929	4,724,895	98,695	56,117	6,605	3,777	6,613	1,853	3,710	617	38,816	12,094
1930	4,842,325	99,882	51,561	6,213	3,624	6,518	1,805	3,714	597	29,482	10,639
1931	4,883,703	92,547	49,068	5,187	3,084	5,643	1,473	3,220	539	28,856	9,507
1932	4,925,081	85,254	49,569	4,630	2,798	5,210	1,372	2,980	493	28,552	7,889
1933	4,966,459	85,482	48,507	4,094	2,591	4,906	1,364	2,776	447	33,132	7,671
1934	5,007,837	83,944	50,440	4,377	2,717	4,781	1,419	2,607	450	43,241	10,124
1935	5,049,216	87,403	51,051	4,170	2,550	4,832	1,389	2,717	438	45,313	10,844
1936	5,090,594	88,437	54,777	4,479	2,647	4,726	1,395	2,625	425	47,023	11,419
1937	5,131,972	91,566	53,468	4,374	2,700	4,919	1,415	2,707	326	47,954	12,472
1938	5,173,350	95,962	50,678	4,319	2,734	4,984	1,484	2,732	345	36,105	10,648
1939	5,214,728	94,432	52,017	3,952	2,594	4,706	1,396	2,572	280	37,725	11,589
1940	5,256,106	99,106	52,092	4,022	2,829	4,749	1,298	2,602	292	46,342	12,054
1941	5,437,546	107,498	52,671	4,168	2,687	4,991	1,353	2,760	298	50,989	13,317
1942	5,538,856	124,068	52,738	4,806	3,091	5,581	1,575	3,067	260	51,582	14,085
1943	5,377,329	125,441	56,774	4,804	2,979	5,563	1,488	3,213	237	44,385	15,259
1944	5,377,329	113,585	54,016	4,325	2,784	5,140	1,412	2,874	198	41,678	18,358
1945	5,435,092	111,557	53,641	4,008	2,670	4,906	1,339	2,703	166	48,329	21,133
1946	5,708,415	138,572	54,856	4,641	3,323	5,978	1,735	3,168	163	78,808	29,158
1947	6,069,000	160,275	56,807	5,055	3,677	6,583	1,953	3,422	173	71,319	21,386
1948	6,195,000	153,726	56,520	4,617	3,352	5,968	1,820	3,132	120	61,986	18,017
1949	6,352,000	156,459	57,107	4,520	3,232	5,748	1,795	2,994	105	53,109	16,274
1950	6,371,766	160,055	57,567	4,214	3,043	5,781	1,098	3,095	91	58,180	16,979
1951	6,545,000	172,451	59,181	4,505	3,298	6,088	1,232	3,158	94	53,411	15,446
1952	6,708,000	177,235	59,138	4,689	3,414	6,266	1,256	3,224	82	50,487	14,925
1953	6,852,000	182,958	62,087	4,728	3,369	6,188	1,114	3,180	79	53,308	16,537
1954	7,024,000	192,104	60,706	4,795	3,560	6,415	1,298	3,249	94	51,243	16,281
1955	7,236,000	196,294	63,087	4,873	3,707	6,381	1,272	3,029	81	55,698	17,676
1956	7,516,000	204,068	64,352	5,047	3,796	6,655	1,244	3,245	84	57,068	16,229
1957	7,803,000	208,488	66,435	5,093	3,884	6,668	1,322	3,154	79	55,121	15,442
1958	7,868,000	202,890	65,899	4,980	3,789	6,516	1,206	3,101	69	55,159	14,040
1959	7,960,000	198,301	66,812	4,846	3,874	6,250	1,201	2,928	72	56,826	16,168
1960	7,823,194	195,056	67,912	4,702	3,580	6,247	1,148	3,008	75	61,090	16,656
1961	7,903,000	192,825	67,375	4,604	3,475	5,875	1,003	2,735	78	63,320	16,219
1962	7,939,000	182,790	70,049	4,387	3,251	5,669	907	2,703	56	65,002	17,500
1963	8,030,000	178,871	72,438	4,150	3,109	5,407	816	2,540	71	68,160	17,479
1964	8,100,000	175,103	72,129	4,043	3,071	5,293	807	2,466	62	73,911	19,400
1965	8,192,283	166,464	73,665	3,936	2,909	5,139	768	2,475	54	81,247	20,305
1966	8,314,070	165,793	74,596	3,751	2,830	4,909	819	2,295	54	83,903	21,727
1967	8,615,000	162,756	75,360	3,595	2,714	4,693	718	2,195	52	84,363	23,820
1968	8,675,000	159,058	76,855	3,438	2,617	4,476	487	2,064	44	90,984	25,400
1969	8,734,000	165,760	76,693	3,356	2,550	4,488	459	2,175	37	93,332	28,347
1970	8,875,083	171,667	76,321	3,492	2,683	4,522	436	2,060	29	91,933	29,834
1971	8,996,000	162,244	77,395	3,157	2,412	4,139	386	1,923	32	92,134	31,790
1972	9,013,475	146,854	79,210	2,801	2,115	3,700	316	1,770	35	94,447	35,505
1973	9,061,000	141,550	78,522	2,561	1,902	3,392	263	1,662	26	94,486	37,121[4]
1974	9,098,000	137,414	76,143	2,387	1,734	2,960	240	1,451	19	88,023	39,940[4]
1975	9,157,000	133,931	74,522	2,205	1,563	2,690	187	1,373	16	82,856	40,782
1976	9,104,000	131,378	75,801	1,978	1,424	2,502	186	1,271	14	82,753	43,101
1977	9,129,000	138,416	74,144	1,945	1,367	2,456	155	1,288	11	86,088	43,036
1978	9,189,000	138,802	74,773	1,931	1,281	2,322	152	1,221	15	88,333	45,029

1 - 1900-1942: United States Bureau of Census April 1 Census counts and July 1 estimates.
1943-1944: United States Bureau of Census November 1, 1943 estimate.
1945-1960: United States Bureau of Census April 1 Census counts and July 1 estimates.
1961-1964: University of Michigan Population Studies Center July 1 estimates.
1965-1969: Michigan Center for Health Statistics July 1 estimate.
1970: United States Bureau of Census April 1 Census counts.
1971-1978: United States Bureau of Census Provisional July 1 estimates.

2 - For years prior to 1950 deaths under 1 month of age are included in deaths under 28 days.

3 - For 1910 through 1921 deaths due to immaturity also include deaths from congenital debility. Beginning with the year 1968, the category of deaths due to immaturity is no longer considered for primary mortality coding unless it is the only cause of death entered on the certificate. Previously this category include Immaturity Unqualified plus Immaturity with mention of any other Subsidiary Condition.

4 - Estimate.

TABLE 4.2

LIVE BIRTH RATES: DEATH RATES-ALL AGES, INFANT, NEONATAL, PERINATAL, MATERNAL AND MORTALITY RATES DUE TO IMMATURITY: FETAL DEATH RATIO: MARRIAGE AND DIVORCE RATES MICHIGAN RESIDENTS, 1900-1978

(Birth rate, death rate for all ages, rate of persons married and rate of persons divorced per 1,000 population. Fetal death ratio, mortality rates under 1 year, under 28 days, and death rates due to immaturity per 1,000 live births. Maternal mortality rates per 10,000 live births. Perinatal mortality rate-number of deaths under 1 week and fetal deaths per 1,000 live births and fetal deaths.)

Year	LIVE BIRTHS	DEATHS							PERSONS	
		All Ages	Under 1 Year	Under[1] 28 Days	Peri-natal	Due to[2] Immaturity	Fetal	Maternal	Married	Divorced
1900	18.1	13.4	157.1			14.2	30.3	103.4	19.2	2.0
1901	17.6	13.3	148.2			12.1	34.7	172.9	19.8	2.0
1902	18.2	12.6	130.6			13.3	39.4	102.8	20.5	2.3
1903	18.1	13.1	141.0			11.8	39.4	92.8	20.5	2.3
1904	18.4	13.4	135.1			13.3	40.2	91.8	19.3	2.2
1905	18.0	13.3	150.2			16.0	43.5	88.6	20.1	2.2
1906	22.1	14.0	135.7			14.2	40.2	66.3	20.7	2.4
1907	21.9	13.6	117.0			14.5	39.9	66.2	20.7	2.3
1908	23.7	13.5	118.8			15.1	41.6	67.9	18.9	2.2
1909	23.2	13.1	115.7			17.9	39.5	63.0	19.7	2.5
1910	22.8	14.2	124.8			32.0	39.9	67.2	20.7	2.6
1911	22.7	13.1	108.4			33.8	41.3	68.6	20.6	2.8
1912	23.3	13.0	100.4			33.6	41.8	56.9	21.3	2.6
1913	23.8	13.3	104.8			33.9	40.4	72.3	21.9	2.6
1914	24.3	12.7	96.8			31.1	40.6	66.0	22.4	2.8
1915	25.0	12.5	85.6			27.2	41.4	60.2	21.9	2.9
1916	26.2	13.8	96.7			28.7	42.4	57.8	24.1	3.3
1917	26.2	13.8	88.5			26.5	39.7	65.5	25.1	3.3
1918	26.1	15.6	89.8			25.9	40.4	77.7	19.0	3.1
1919	23.5	12.7	89.9			26.0	40.0	68.8	25.4	4.2
1920	25.1	14.2	93.1			27.2	40.9	86.2	27.7	4.7
1921	25.4	11.7	79.0			25.8	38.2	63.0	21.9	4.1
1922	23.1	11.2	74.7			19.9	42.0	61.2	22.3	3.9
1923	23.1	12.3	80.4			20.6	39.3	62.7	24.7	4.4
1924	23.7	11.4	72.2	41.9	66.7	20.1	37.7	64.8	24.1	4.5
1925	23.3	11.6	75.7	40.6	64.9	20.1	37.1	63.5	21.7	4.5
1926	22.5	12.4	77.5	41.2	66.3	20.2	38.8	64.2	18.7	4.5
1927	22.3	11.3	67.7	39.2	65.5	19.1	38.4	66.7	16.2	4.7
1928	21.2	11.9	69.8	38.4	65.2	18.9	38.0	61.9	16.2	4.6
1929	20.9	11.9	66.9	38.3	64.8	18.8	37.6	62.5	15.6	5.1
1930	20.4	10.6	62.8	36.6	63.5	18.3	37.6	60.4	12.2	4.4
1931	18.5	10.1	57.3	34.1	60.2	16.3	35.6	59.5	11.8	3.9
1932	17.3	10.1	54.3	32.8	59.0	16.1	35.0	57.8	11.6	3.2
1933	16.2	9.8	50.9	32.2	58.9	16.9	34.5	55.5	13.3	3.1
1934	16.8	10.1	52.1	32.4	55.2	16.9	31.1	53.6	17.3	4.0
1935	17.3	10.1	47.7	29.2	53.6	15.9	31.1	50.1	17.9	4.3
1936	17.4	10.8	50.6	29.9	51.9	15.8	29.7	48.0	18.5	4.5
1937	17.8	10.4	47.8	29.5	52.2	15.5	29.6	35.6	18.7	4.9
1938	18.7	9.8	44.5	28.2	50.0	15.3	28.2	35.6	11.6	4.1
1939	18.1	10.0	41.8	27.6	48.5	14.8	27.2	29.6	14.5	4.4
1940	18.9	9.9	40.6	26.5	46.7	13.1	26.3	29.5	17.6	4.6
1941	19.8	9.7	38.8	25.0	45.3	12.6	25.8	27.7	18.8	4.9
1942	22.4	9.5	37.1	24.9	43.9	12.7	24.7	21.0	18.6	5.1
1943	23.3	10.6	38.3	23.7	43.2	11.9	25.6	18.9	16.5	5.7
1944	21.1	10.0	38.1	24.5	44.1	12.4	25.3	17.4	15.5	6.8
1945	20.5	9.9	35.9	23.9	42.8	12.0	24.2	14.9	17.8	7.8
1946	24.3	9.6	32.8	24.0	42.2	12.5	22.9	11.8	27.6	10.2
1947	26.4	9.4	31.5	22.9	40.2	12.2	21.4	10.8	23.5	7.1
1948	24.8	9.1	30.0	21.8	38.0	11.8	20.4	7.8	20.0	6.2
1949	24.6	9.0	28.9	20.7	36.0	11.5	19.1	6.7	16.7	6.1
1950	25.1	9.0	29.3	19.0	35.4	6.8	19.3	5.7	18.3	5.0
1951	26.3	9.0	26.1	19.1	34.7	7.1	18.3	5.5	16.3	4.7
1952	26.5	8.8	26.4	19.2	34.6	7.1	18.1	4.8	15.1	4.4
1953	26.7	9.1	25.8	18.5	33.2	6.1	17.4	4.3	15.6	4.8
1954	27.3	8.6	25.0	18.5	32.8	6.8	16.9	4.9	14.6	4.6
1955	27.1	8.7	24.8	18.9	32.0	6.5	15.4	3.1	15.4	4.9
1956	27.4	8.6	24.5	18.4	31.8	6.0	15.7	4.1	15.2	4.3
1957	26.7	8.5	24.4	18.6	31.5	6.3	15.1	3.8	14.1	4.0
1958	25.8	8.4	24.6	18.7	31.7	6.0	15.3	3.4	14.0	3.8
1959	24.9	8.4	24.4	18.5	31.1	6.1	14.8	3.6	14.8	4.1
1960	24.9	8.7	24.1	18.4	31.5	5.9	15.4	3.8	15.6	4.3
1961	24.4	8.5	23.9	18.0	30.0	5.2	14.2	4.0	16.0	4.1
1962	23.0	8.8	23.9	17.8	30.8	5.0	14.8	3.1	16.4	4.4
1963	22.3	9.0	23.2	17.4	29.8	4.6	14.2	4.0	17.0	4.4
1964	21.6	8.9	23.1	17.5	29.8	4.6	14.1	3.5	18.2	4.8
1965	20.3	9.0	23.6	17.5	30.4	4.8	14.9	3.2	19.8	5.0
1966	19.9	9.0	22.6	17.1	29.2	4.9	13.8	3.3	20.2	5.2
1967	18.9	8.7	22.1	16.7	28.4	4.4	13.5	3.2	19.6	5.9
1968	18.3	8.9	21.6	16.5	27.8	3.1	13.0	2.8	21.0	5.9
1969	19.0	8.8	20.2	15.4	26.7	2.8	13.1	1.6	21.4	6.5
1970	19.3	8.6	20.3	16.6	26.0	2.6	12.0	1.7	20.7	6.7
1971	18.0	8.6	19.5	14.9	25.2	2.4	11.9	2.0	20.5	7.1
1972	16.3	8.8	19.1	14.4	24.9	2.2	12.1	2.4	21.0	7.9
1973	15.6	8.7	18.1	13.4	23.7	2.9	11.9	1.8	20.9	8.2[3]
1974	15.1	8.4	17.4	12.6	21.3	1.7	10.6	1.4	19.3	8.8[3]
1975	14.6	8.1	16.5	11.7	19.9	1.4	10.3	1.2	18.1	8.9
1976	14.4	8.3	15.1	10.8	18.9	1.4	9.7	1.1	18.2	9.5
1977	15.2	8.1	14.1	9.9	17.6	1.1	9.3	[illegible] 0.8	18.9	9.4
1978	15.1	8.1	13.9	9.2	16.7	1.1	8.7	1.1	19.2	9.8

[1] For years prior to 1950 deaths under 1 month of age are included in deaths under 28 days.
[2] For 1910 through 1921 deaths due to immaturity also include deaths from congenital debility.
[3] Estimate.

TABLE 4.3
NUMBER OF LIVE BIRTHS BY AGE OF MOTHER
MICHIGAN RESIDENTS, 1920-1978

YEAR	AGE OF MOTHER									
	ALL AGES[1]	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	AGE NOT STATED
1920	92,740	34	8,129	26,344	26,251	17,521	10,427	3,523	336	175
1921	96,322	39	8,747	26,583	27,292	18,433	11,150	3,572	337	169
1922	90,209	28	8,125	24,575	25,154	17,690	10,584	3,485	343	225
1923	93,066	37	8,725	25,887	25,459	18,072	10,770	3,476	382	258
1924	98,025	38	9,877	28,000	25,781	18,707	11,395	3,682	321	224
1925	99,220	42	10,248	28,116	26,204	18,869	11,406	3,895	379	241
1926	98,781	76	10,496	28,479	25,8[illegible]	18,444	11,219	3,568	254	269
1927	100,178	59	10,685	29,302	25,707	18,790	11,287	3,722	332	294
1928	97,797	54	10,768	28,895	25,003	17,953	10,913	3,558	315	318
1929	99,134	56	11,312	30,582	25,557	16,957	10,555	3,523	293	299
1930	99,325	60	11,476	29,958	25,861	17,125	10,684	3,582	291	290
1931	90,929	61	10,109	27,255	23,806	15,937	9,905	3,317	302	237
1932	85,736	62	9,297	25,686	22,608	14,988	9,314	3,250	291	240
1933	80,523	52	8,642	23,874	21,618	14,298	8,795	3,173	261	210
1934	83,925	48	9,039	25,458	22,507	14,968	8,391	3,050	259	205
1935	87,446	47	9,808	27,631	22,938	15,026	8,473	3,029	284	210
1936	88,427	53	9,764	28,681	23,584	14,814	8,194	2,866	274	197
1937	91,539	54	10,524	30,532	24,366	15,022	7,949	2,653	242	197
1938	96,963	64	11,024	32,581	26,116	15,690	8,397	2,698	253	140
1939	94,302	51	10,368	31,036	26,095	15,976	8,021	2,416	209	130
1940	99,021	51	10,671	32,960	27,860	16,549	8,146	2,390	202	192
1941	107,458	50	11,309	36,833	31,067	17,132	8,351	2,361	200	155
1942	123,886	66	12,721	43,947	36,034	19,367	8,985	2,445	202	119
1943	125,778	67	11,934	41,627	37,773	21,449	9,980	2,615	184	149
1944	114,700	76	10,113	36,096	33,654	21,094	10,636	2,714	182	135
1945	112,655	73	9,294	32,790	33,143	22,831	11,185	2,970	229	140
1946	139,277	72	10,899	45,999	41,965	25,184	11,811	3,002	223	102
1947	161,085	91	15,594	55,954	47,793	26,296	12,009	3,073	182	93
1948	154,730	95	16,245	53,520	45,059	25,268	11,391	2,888	173	91
1949	157,178	117	16,404	53,608	46,363	25,971	11,565	2,906	181	63
1950	160,955	111	16,310	53,442	48,186	27,422	12,392	2,831	169	92
1951	173,506	104	17,974	57,340	52,044	29,674	13,086	3,040	160	84
1952	178,634	134	17,206	58,012	54,198	31,756	13,880	3,176	220	52
1953	182,810	166	18,510	58,070	54,734	32,948	14,798	3,350	190	44
1954	192,322	208	20,522	50,778	55,962	35,152	15,862	3,598	220	32
1955	196,623	195	21,417	61,952	56,462	35,968	16,554	3,862	198	15
1956	206,226	192	22,868	66,332	58,392	36,870	17,282	4,172	164	14
1957	208,806	190	23,798	67,086	58,424	36,980	17,956	4,160	200	14
1958	202,900	222	23,034	65,834	55,130	36,278	17,892	4,296	196	18
1959	198,576	200	21,922	65,426	53,434	34,934	18,030	4,424	198	8
1960	195,056	186	22,786	65,108	51,842	33,228	17,410	4,288	202	6
1961	192,825	212	23,891	64,336	50,277	32,456	17,067	4,363	203	20
1962	182,790	268	22,702	62,243	47,109	29,817	16,160	4,250	224	17
1963	178,871	210	21,686	62,834	45,063	28,364	15,117	4,359	229	9
1964	175,103	264	22,526	62,198	44,871	26,542	14,509	4,162	220	13
1965	166,464	267	24,653	59,439	40,693	23,767	13,528	3,886	211	20
1966	165,794	310	28,690	60,711	39,225	21,205	11,846	3,547	223	37
1967	162,758	316	27,267	61,541	40,052	19,840	10,479	3,058	178	24
1968	159,058	400	26,390	60,072	41,561	18,613	9,095	2,739	163	25
1969	165,760	421	28,061	63,376	44,615	18,535	8,157	2,433	134	28
1970	171,667	489	29,764	65,892	46,262	19,003	7,904	2,223	118	12
1971	162,244	472	28,480	62,367	43,639	18,259	6,975	1,926	112	14
1972	148,854	503	28,108	54,199	40,442	18,133	5,805	1,555	95	14
1973	141,550	569	27,800	51,284	39,845	15,520	5,163	1,277	62	22
1974	137,414	501	25,977	49,975	40,215	15,317	4,291	1,063	50	25
1975	133,931	463	24,509	48,675	40,061	14,891	4,273	982	54	23
1976	131,378	404	22,593	47,161	41,412	14,893	4,063	799	47	16
1977	138,416	426	22,565	49,740	43,346	17,293	4,178	771	51	26
1978	138,802	345	21,487	49,498	43,744	18,367	4,562	729	50	20

[1] Total live births for the years 1920 through 1959 differ from figures in Table 4.1 as they are derived from outside sources. Live births by age of mother were not tabulated in Michigan prior to 1960. These data were obtained from the following sources.

YEAR	SOURCE
1920-1923	Unpublished Tables from the National Center for Health Statistics.
1924-1932	Bureau of the Census publication. *Birth, Stillbirth and Infant Mortality Statistics for Birth Registration Areas of the United States.*
1933-1936	Unpublished Tables from the National Center for Health Statistics.
1937-1949	Bureau of the Census publication, *Vital Statistics of the United States* series.
1950-1959	Department of Health Education and Welfare publication, *Vital Statistics of the United States* series.

TABLE 4.4
LIVE BIRTH RATES BY FIVE YEAR AGE GROUPS OF MOTHER
MICHIGAN RESIDENTS, 1920-1978

(Live Birth Rates are per 1,000 women per year. Total Fertility Rate is total children to 1,000 women in their lifetime assuming constant Live Birth Rates.)

YEAR	AGE OF MOTHER								TOTAL FERTILITY RATE
	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+[1]	
1920	0.2	85.7	173.1	164.0	124.2	83.8	34.3	3.8	3,195.5
1921	0.2	86.9	107.3	165.5	125.8	84.8	32.8	3.6	3,104.5
1922	0.2	80.8	140.6	149.1	117.3	77.1	30.7	3.5	2,891.5
1923	0.2	82.6	152.6	147.5	116.5	75.4	29.3	3.8	2,889.5
1924	0.2	57.4	160.0	146.1	117.3	76.7	29.9	3.1	2,953.5
1925	0.3	87.4	155.9	145.4	115.2	73.9	28.8	3.5	2,902.0
1926	0.4	86.9	153.3	140.5	109.7	70.1	25.8	3.2	2,804.5
1927	0.3	86.0	153.3	138.6	108.9	66.1	27.0	2.9	2,766.5
1928	0.2	84.8	147.1	130.3	101.5	63.7	25.0	2.6	2,626.0
1929	0.2	85.7	161.8	130.6	93.6	59.8	23.9	2.4	2,587.5
1930	0.3	55.9	146.6	130.2	92.8	58.9	23.7	2.3	2,544.5
1931	0.3	47.8	130.4	118.3	85.3	54.3	21.8	2.3	2,301.0
1932	0.3	43.4	121.5	111.2	79.4	50.6	20.8	2.2	2,148.0
1933	0.2	39.7	111.6	105.2	75.0	47.7	20.0	1.9	2,006.5
1934	0.2	41.0	117.6	108.4	77.8	45.3	18.9	1.8	2,065.0
1935	0.2	43.9	126.2	109.4	77.4	45.5	18.5	2.0	2,115.5
1936	0.2	43.1	129.5	111.4	75.5	43.8	17.3	1.8	2,113.0
1937	0.2	45.9	136.4	113.9	75.9	42.3	15.8	1.6	2,160.0
1938	0.3	47.4	143.9	120.9	78.5	44.4	15.6	1.6	2,264.0
1939	0.2	44.1	135.6	119.6	79.2	42.3	14.0	1.3	2,181.5
1940	0.2	44.9	142.8	128.8	81.5	42.6	13.7	1.2	2,269.5
1941	0.2	48.1	157.8	137.1	81.6	42.5	13.2	1.2	2,408.5
1942	0.3	54.5	186.6	155.3	89.9	44.7	13.4	1.2	2,729.5
1943	0.3	51.8	175.1	159.0	97.1	48.6	14.1	1.1	2,734.5
1944	0.3	[illegible]	150.5	138.5	93.2	50.6	14.3	1.0	2,462.5
1945	0.3	40.8	135.5	133.4	96.5	52.1	15.4	1.3	2,306.5
1946	0.3	48.3	188.5	165.3	106.2	53.8	15.3	1.2	2,894.5
1947	0.4	69.7	227.3	184.2	108.4	53.6	15.4	1.0	3,300.0
1948	0.4	73.2	216.5	170.0	101.9	49.8	14.2	1.0	3,130.0
1949	0.5	74.6	214.0	171.4	102.5	49.6	14.1	1.0	3,138.5
1950	0.5	74.6	212.0	175.5	106.5	52.3	13.6	0.9	3,179.5
1951	0.4	79.1	229.0	192.2	114.4	53.9	14.1	0.8	3,419.5
1952	0.5	73.5	233.0	202.5	121.7	56.1	14.4	1.1	3,514.0
1953	0.6	76.6	234.5	207.0	125.5	58.7	14.9	0.9	3,594.5
1954	0.7	82.6	246.8	214.1	133.1	61.8	15.6	1.1	3,780.0
1955	0.6	84.1	253.0	218.6	135.4	63.4	16.4	0.9	3,862.0
1956	0.6	87.2	272.4	228.9	138.0	65.0	17.4	0.8	4,051.5
1957	0.6	88.6	277.1	231.8	137.6	66.4	17.0	0.9	4,100.0
1958	0.6	83.6	273.4	221.5	134.3	65.0	17.2	0.9	3,982.5
1959	0.6	77.8	273.3	217.4	128.6	64.4	17.3	0.9	3,900.5
1960	0.5	79.3	273.1	213.0	121.8	61.4	16.5	0.9	3,833.0
1961	0.6	78.1	252.0	200.7	120.2	61.3	16.8	0.9	3,653.0
1962	0.7	70.7	231.5	183.9	111.4	58.9	16.3	0.9	3,371.5
1963	0.5	64.6	222.5	175.9	107.0	55.9	16.5	0.9	3,219.5
1964	0.6	64.2	210.1	167.0	101.0	54.4	15.8	0.9	3,070.0
1965	0.6	67.4	192.0	140.0	91.2	51.5	14.7	0.8	2,836.0
1966	0.7	75.4	187.9	140.7	82.1	45.8	[illegible]	0.9	2,734.5
1967	0.7	69.0	182.8	140.8	77.6	41.2	11.5	0.7	2,621.5
1968	0.9	64.3	171.5	143.2	73.4	36.3	10.2	0.6	2,502.0
1969	0.9	66.0	174.2	150.8	73.8	33.1	9.1	0.5	2,542.0
1970	1.0	68.2	176.2	154.2	76.2	32.4	8.3	0.4	2,584.5
1971	1.0	63.5	157.3	141.4	71.8	28.8	7.3	0.4	2,357.5
1972	1.0	62.5	136.4	130.7	63.4	23.9	5.8	0.3	2,120.0
1973	1.2	60.1	131.9	120.9	55.8	22.1	4.7	0.2	1,984.5
1974	1.1	55.4	126.0	120.2	52.4	18.1	4.5	0.2	1,889.5
1975	1.0	51.7	118.8	118.8	49.2	17.7	4.3	0.2	1,798.5
1976	0.9	47.7	122.1	120.6	48.7	18.4	4.3	0.2	1,815.5
1977	0.8	47.6	127.4	130.5	53.8	17.6	4.2	0.2	1,806.0
1978	0.7	45.6	123.3	132.3	53.8	17.5	3.9	0.2	1,896.5

1 - Age-specific birth rates for 45-49 based on births to women aged 45 and over.

SOURCE: Population figures used for 1920-1970 rates are from General Population Characteristics, Michigan, USBC, 1971, with arithmetic extrapolation between census years. 1971-1978 population source, see Table 4.16.

TABLE 6.5

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES

MICHIGAN RESIDENTS, 1900-1978

Year	Diphtheria	Streptococcal Sore Throat (Including Scarlet Fever)	Smallpox	Typhoid Fever	Whooping Cough	Measles	Hepatitis, Infectious and Serum	Tuberculosis (all forms)[2]	Meningococcal Infections[1]	Poliomyelitis	Syphilis	Gonorrhea	Chancroid
1900	2,706	6,734	694	5,122	3,375	20,356		2,721	654				
1901	2,498	7,726	5,088	3,002	2,955	4,629		2,915	508				
1902	2,993	6,582	7,066	2,456	3,534	11,978		2,658	528				
1903	3,670	5,353	6,341	2,840	4,172	8,941		2,745	525				
1904	3,510	4,088	5,753	3,028	1,779	10,386		2,928	448				
1905	2,159	2,286	2,985	2,774	1,196	6,061		2,590	577				
1906	3,648	3,066	1,240	3 163	1,364	7,403		2,653	533				
1907	2,935	2,514	1,712	1,953	872	12,139		2,699	575				
1908	2,658	3,087	2,306	2,656	1,248	4,775		2,705	487				
1909	3,109	5,153	1,533	2,694	1,054	9,047		3,423	457				
1910	3,433	6,501	3,319	3 361	1,136	13,934		4,415	522	104			
1911	3,76[illegible]	5,177	898	2 660	1,897	9,639		5,254	478	68			
1912	3,294	4,533	1,127	2,847	1,255	2,834		1,958	88	78			
1913	5,505	4,140	1,995	2,253	929	9,185		1,920	165	56			
1914	5,149	3,769	1,527	2,167	1,822	11,356		2,566	205	49			
1915	4,386	3,402	1,094	1,956	2,258	4,438		3,648	107	95			
1916	5,625	6,932	1,581	2,513	1,837	12,143		7,076	163	5[illegible]			
1917	8,499	14,322	3,674	1,723	3,211	14,472		4,856	75	91			
1918	6,128	5,944	5,241	1,339	2,563	6,726		3,655	95	121			
1919	7,896	6,269	2,381	1,254	1,829	8,885		4,231	75	155	5,077	7,910	186
1920	10,360	10,280	4,818	1,421	7,171	22,364		4,994	203	67	8,117	11,463	262
1921	12,075	10,893	4,512	1,837	6,636	3,043		5,708	173	483	7,421	9,774	153
1922	8,513	9,687	1,230	1,108	5,642	12,107		5,573	159	43	7,900	9,717	90
1923	7,725	12,858	2,311	982	7,617	30,041		5,471	186	39	10,480	9,597	235
1924	6,011	12,989	4,527	782	4,364	18,290		5,570	157	647	13,000	10,490	183
1925	3,925	12,303	784	962	7,576	10,332		5,785	128	99	14,668	10,660	104
1926	5,377	12,681	549	583	8,776	39,946		5,387	96	107	14,872	10,707	103
1927	4,575	11,011	1,467	581	6,818	8,303		5,406	138	282	15,713	9,318	107
1928	3,724	10,486	1,335	390	9,700	27,039		5,865	276	77	15,323	8,592	100
1929	4,618	14,245	2,410	310	9,340	18,040		6,248	1,864	180	16,606	9,661	333
1930	3,206	11,174	2,375	504	7,937	28,129		6,128	901	208	16,538	8,554	163
1931	1,831	13,023	915	424	11,448	6,212		6,132	293	1,137	14,662	7,843	170
1932	1,188	15,255	222	513	13,091	42,129		7,103	129	112	11,969	6,963	140
1933	1,152	16,419	46	453	11,720	21,654		6,624	88	93	7,691	6,447	85
1934	614	19,238	59	486	11,255	6,528		5,264	53	230	6,483	6,188	132
1935	645	11,849	16	355	13,427	79,061		4,642	113	614	6,416	6,372	110
1936	661	12,650	32	287	14,287	2,453		6,157	120	152	6,401	6,460	133
1937	842	24,798	152	241	11,426	6,154		6,469	87	421	8,708	7,072	244
1938	619	18,362	274	285	14,563	79,400		6,335	69	59	14,684	7,046	341
1939	452	15,836	371	177	8,997	12,948		6,119	46	904	13,144	6,364	286
1940	264	10,3[illegible]	76	120	11,757	20,206		6,063	49	1,228	9,999	7,650	218
1941	242	8,756	114	147	16,512	70,748		5,371	49	270	11,370	8,767	359
1942	243	7,503	17	74	11,602	8,569		5,720	66	162	12,461	8,753	276
1943	281	5,044	18	115	12,091	51,764		6,546	757	255	15,933	9,526	260
1944	419	8,963	10	78	4,049	26,711		6,419	857	884	17,288	11,987	185
1945	630	9,304	16	59	5,339	6,328	134	6,471	270	215	18,046	12,565	244
1946	385	5,977	3	85	8,116	42,261	34	5,548	185	1,091	18,051	12,635	206
1947	238	4,834	1	77	10,472	9,574	14	6,470	113	646	15,276	10,989	216
1948	128	5,934	—	49	2,668	42,952	9	6,109	107	775	12,100	9,448	465
1949	119	8,852	—	48	4,157	20,279	28	5,953	120	2,909	8,740	9,427	336
1950	84	4,665	—	43	9,184	38,245	48	5,538	133	2,029	8,8[illegible]	8,678	202
1951	46	8,181	—	33	3,156	15,227	325	6,144	136	1,463	8,532	8,494	187
1952	45	8,325	—	53	1,992	32,941	283	6,152	169	3,912	7,377	7,691	58
1953	12	5,885	—	31	2,932	23,334	868	5,643	151	2,346	5,619	8,790	43
1954	57	5,142	—	30	5,620	40,725	1,419	5,764	150	2,168	4,686	9,940	47
1955	59	5,880	—	24	4,249	23,882	1,244	5,488	170	1,177	4,865	10,306	58
1956	220	7,349	—	56	1,907	41,966	814	5,515	182	656	4,785	9,598	52
1957	130	7,193	—	12	1,363	19,070	657	5,011	175	498	4,571	8,428	97
1958	6	5,380	—	18	1,233	41,448	688	5,587	228	1,228	4,267	8,621	178
1959	3	9,452	—	8	3,001	12,234	1,136	4,743	141	448	3,421	8,033	136
1960	9	9,287	—	14	1,129	36,161	2,113	4,127	169	88	3,647	8,372	112
1961	3	8,347	—	7	639	29,391	4,607	3,836	253	40	3,309	9,505	102
1962	4	8,116	—	12	1,756	25,303	3,280	3,474	139	21	4,331	11,654	75
1963	5	11,964	—	14	1,410	48,752	2,661	3,298	104	18	5,512	11,043	98
1964	1	17,228	—	13	957	30,837	2,472	3,047	80	3	5,220	12,028	106
1965	—	14,622	—	7	612	28,132	2,625	3,069	107	1	5,638	14,319	95
1966	1	13,862	—	7	653	15,251	2,589	3,259	135	1	5,842	15,424	114
1967	1	13,269	—	8	1,058	1,04[illegible]	1,915	2,951	76	3	5,581	17,088	78
1968	—	10,101	—	1	429	353	2,356	2,618	94	3	5,351	18,153	105
1969	—	9,763	—	6	192	401	3,359	2,133	114	1	3,809	18,534	103
1970	—	11,863	—	14	195	1,834	4,594	1,992	69	2	3,920	20,359	118
1971	1	11,244	—	10	140	2,659	4,828	1,789	64	—	4,800	22,260	93
1972	1	13,304	—	7	116	2,353	4,322	1,632	55	1	4,891	24,750	175
1973	—	24,467	—	14	86	4,552	3,872	1,473	54	—	4,375	31,066	217
1974	—	31,802	—	11	104	2,365	3,599	1,431	54	2	2,722	32,067	171
1975	1	23,777	—	10	98	3,253	2,877	1,271	76	—	1,638	32,583	98
1976	—	24,937	—	10	70	6,139	2,645	1,349	65	1	1,089	34,836	37
1977	—	31,047	—	13	73	1,392	2,686	1,290	51	—	1,185	36,794	61
1978	—	29,759	—	15	47	8,006	2,174	1,260	87	1	1,133	36,647	49

[1] Meningococcal Infections—Prior to 1952 data were for meningococcic meningitis. Tuberculosis, syphilis, gonorrhea and chancroid are resident cases

[2] Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, case counts and rates prior to 1975 are not directly comparable to the figures in 1975 and later years

TABLE 4.6
CASE RATES OF CERTAIN REPORTED COMMUNICABLE DISEASES
MICHIGAN RESIDENTS, 1900-1978

(Rates per 100,000 population)

Year	Diphtheria	Streptococcal Sore Throat (Including Scarlet Fever)	Smallpox	Typhoid Fever	Whooping Cough	Measles	Infectious Hepatitis & Serum	Tuberculosis (all forms)**	Meningococcal Infections*	Poliomyelitis	Syphilis	Gonorrhea	Chancroid
1900	111.8	278.2	28.7	211.6	139.4	840.8		112.4	27.0				
1901	101.5	314.1	206.8	122.0	120.1	188.2		118.5	20.6				
1902	119.8	253.4	283.6	98.3	141.4	479.3		106.4	21.1				
1903	144.6	210.9	249.9	111.9	164.4	352.3		108.2	20.7				
1904	136.2	158.7	223.3	117.5	69.0	403.1		113.6	17.4				
1905	82.5	87.4	114.1	106.1	45.7	231.7		99.0	22.1				
1906	137.4	115.5	46.7	119.2	51.4	278.9		99.9	20.1				
1907	109.0	93.3	63.6	72.5	32.4	450.7		100.2	21.3				
1908	97.3	113.0	84.4	97.2	45.7	174.8		99.0	17.8				
1909	112.2	185.9	56.3	87.2	36.0	326.5		123.5	16.5				
1910	122.2	231.3	118.1	119.6	40.4	495.8		157.1	18.6	3.7			
1911	129.9	178.8	31.0	91.8	65.5	332.8		181.4	16.5	2.3			
1912	110.5	152.0	37.8	95.5	42.1	95.0		65.7	3.0	2.8			
1913	179.5	135.0	65.0	73.4	30.3	299.4		62.6	5.4	1.8			
1914	163.3	119.5	48.4	68.7	57.8	360.1		81.4	6.5	1.6			
1915	135.4	105.0	33.8	60.4	69.7	137.0		112.6	3.3	2.9			
1916	169.2	208.5	[illegible]	75.6	55.2	365.2		212.8	4.9	18.0			
1917	249.2	419.9	107.7	[illegible]	94.1	424.3		142.4	2.2	2.7			
1918	175.2	170.0	149.9	38.3	73.3	192.4		104.5	2.7	3.5			
1919	220.4	175.0	66.5	36.0	51.1	348.0		118.1	2.1	4.3	141.7	220.8	5.2
1920	282.4	380.2	131.3	36.7	198.8	609.6		136.1	5.5	1.8	221.3	312.5	7.1
1921	318.9	267.7	119.2	48.5	176.9	80.4		150.8	4.6	12.8	196.0	258.2	4.0
1922	218.1	248.2	31.5	28.4	144.5	310.2		142.8	4.1	1.1	202.4	248.9	2.3
1923	192.1	320.1	57.5	24.4	189.5	747.2		136.1	4.6	1.0	260.7	238.7	5.8
1924	145.3	313.9	109.4	18.9	105.5	442.0		134.6	3.8	15.6	314.2	253.5	4.4
1925	82.2	289.1	18.4	22.6	178.0	242.8		135.9	3.0	2.3	344.7	250.5	2.4
1926	123.0	290.0	12.6	13.3	200.7	913.5		123.2	2.2	2.4	340.1	244.9	2.4
1927	101.9	245.2	32.7	12.9	151.8	184.9		120.4	3.1	6.3	349.9	207.5	2.4
1928	80.8	227.8	29.0	8.5	210.5	586.9		127.7	6.0	1.7	332.6	186.5	2.2
1929	97.7	301.5	61.0	6.6	197.7	381.8		132.2	39.4	3.8	351.4	204.5	7.0
1930	66.2	230.8	48.0	10.4	183.9	880.9		105.9	18.6	4.3	341.5	176.6	3.4
1931	37.5	266.7	18.7	8.7	234.4	127.2		125.6	6.0	23.3	300.2	160.6	3.5
1932	24.1	309.7	4.5	10.4	265.8	855.4		144.2	2.6	2.3	243.0	141.4	2.8
1933	23.2	330.8	0.9	8.1	238.0	438.0		133.4	1.7	1.9	154.9	129.8	1.7
1934	12.3	384.2	1.0	8.7	224.8	130.4		105.1	1.1	4.6	129.5	123.6	2.6
1935	12.8	234.7	0.3	7.0	265.9	1,565.8		91.9	2.2	12.2	127.1	126.2	2.2
1936	13.0	248.5	0.6	5.6	280.7	48.2		101.3	2.4	3.0	125.7	126.9	2.6
1937	16.4	483.2	3.0	4.7	222.6	119.9		126.1	1.7	8.2	168.7	137.8	4.8
1938	12.0	354.9	5.2	5.5	281.5	1,534.8		122.5	1.3	1.1	283.8	136.2	6.6
1939	8.7	303.7	7.1	3.4	172.5	248.3		117.3	0.9	17.3	252.0	122.0	5.5
1940	6.0	197.2	1.4	2.3	223.7	384.4		115.3	0.9	23.4	190.2	145.5	4.1
1941	4.5	161.0	2.1	2.7	303.7	1,301.1		98.8	0.9	5.0	209.1	161.2	6.6
1942	4.4	135.5	0.3	1.3	209.5	154.7		103.3	1.2	2.9	225.0	158.0	5.0
1943	5.2	93.8	0.3	2.1	224.8	962.6		121.7	14.1	4.7	296.3	177.1	4.8
1944	7.8	166.7	0.2	1.5	75.3	496.7		119.4	15.9	16.4	321.5	222.9	3.4
1945	11.6	171.2	0.3	1.1	98.2	116.4	2.5	100.7	5.0	4.0	295.2	231.2	4.5
1946	6.7	104.7	0.1	1.5	142.2	740.3	0.6	97.2	3.2	19.1	316.2	221.3	3.6
1947	3.9	79.6	0.0	1.3	172.5	157.8	0.2	106.6	1.9	10.6	251.7	181.1	3.6
1948	2.0	95.8	—	0.8	43.1	693.3	0.1	98.6	1.7	12.5	195.3	152.5	7.5
1949	1.9	139.4	—	0.8	65.4	319.3	0.4	93.7	1.9	45.8	137.6	148.4	5.3
1950	1.3	73.2	—	0.7	144.1	800.2	0.8	86.9	2.1	31.8	138.6	136.2	3.2
1951	0.7	125.0	—	0.5	[illegible]	232.7	5.0	93.9	2.1	22.4	99.8	129.8	2.9
1952	0.7	124.1	—	0.6	29.7	491.1	4.2	91.7	2.5	58.3	110.0	114.7	0.9
1953	0.2	85.9	—	0.6	42.6	340.5	12.7	82.4	2.2	34.2	82.0	128.3	0.8
1954	0.8	73.2	—	0.4	80.0	579.8	20.2	82.1	2.1	30.9	66.7	141.5	0.7
1955	0.8	81.3	—	0.3	66.7	330.0	17.2	75.8	2.3	16.3	67.2	142.4	0.8
1956	2.9	97.8	—	0.7	25.4	658.4	10.8	73.4	2.4	8.7	63.7	127.7	0.7
1957	1.7	92.2	—	0.2	17.5	244.4	8.4	64.2	2.2	6.4	58.6	108.0	1.2
1958	0.1	66.4	—	0.2	15.7	626.9	8.7	71.0	2.9	15.8	54.2	109.6	2.3
1959	0.0	118.7	—	0.1	37.7	153.7	14.3	59.6	1.8	5.6	43.0	100.9	1.7
1960	0.1	118.7	—	0.2	14.4	462.2	27.0	52.8	2.2	1.1	48.6	107.0	1.4
1961	0.0	105.6	—	0.1	8.1	371.9	58.3	48.6	3.2	0.5	41.9	120.3	1.3
1962	0.1	102.2	—	0.2	22.1	318.7	41.3	43.8	1.8	0.3	54.6	146.8	0.9
1963	0.1	149.0	—	0.2	17.6	607.1	33.1	41.1	1.3	0.2	68.6	137.5	1.2
1964	0.0	212.7	—	0.2	11.8	381.4	30.5	37.6	1.0	0.0	64.4	148.5	1.3
1965	—	178.3	—	0.1	7.6	343.1	32.0	37.4	1.3	0.0	68.8	174.6	1.2
1966	0.0	166.7	—	0.1	7.9	183.4	31.1	39.2	1.8	0.0	70.3	185.5	1.4
1967	0.0	164.0	—	0.1	12.3	12.2	22.2	34.2	0.9	0.0	64.8	196.4	0.9
1968	—	116.4	—	0.0	4.9	4.1	27.2	30.2	1.1	0.0	61.7	209.3	1.2
1969	—	111.8	—	0.1	2.2	4.6	38.5	24.4	1.3	0.0	43.6	212.2	1.2
1970	—	133.7	—	0.2	2.2	20.7	51.8	22.4	0.8	0.0	44.2	229.4	1.3
1971	0.0	125.0	—	0.1	1.6	29.6	53.7	19.9	0.7	—	53.4	247.4	1.0
1972	0.0	147.6	—	0.1	1.3	26.1	48.0	18.1	0.6	0.0	54.3	274.6	1.9
1973	—	270.0	—	0.2	0.9	50.2	42.7	16.3	0.6	—	48.3	343.1	2.4
1974	—	349.5	—	0.1	1.1	26.0	39.6	15.7	0.6	0.0	29.9	352.5	1.9
1975	0.0	259.7	—	0.1	1.1	35.5	31.4	13.9	0.8	—	17.9	355.8	1.1
1976	—	273.9	—	0.1	0.8	67.4	29.1	14.8	0.7	0.0	12.0	382.6	0.4
1977	—	340.1	—	0.1	0.8	15.2	29.4	14.1	0.6	—	13.0	403.0	0.7
1978	—	323.9	—	0.2	0.5	87.1	23.7	13.7	0.9	0.0	12.3	398.8	0.5

*Meningococcal infections—Prior to 1952 data were for meningococcic meningitis.

**Effective January, 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, case counts and rates prior to 1975 are not directly comparable to the figures in 1975 and later years.

SOURCE: Bureau of Disease Control and Laboratory Services, Division of Epidemiology, Mich. Dept. of Public Health.

TABLE 4.7
NUMBER OF DEATHS AND DEATH RATES FOR CERTAIN COMMUNICABLE DISEASES
MICHIGAN RESIDENTS, 1900-1978
(Rates per 100,000 population)

Year	Diptheria		Strep. Sore Throat Incl. Scarlet Fever		Smallpox		Typhoid Fever		Whooping Cough		Measles		TB of the Respiratory System		Tuberculosis² (all forms)		Poliomyelitis		Syphilis¹		Gonorrhea	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1900	529	21.9	272	11.2	9	0.4	869	35.9	208	8.6	342	14.1	2,018	83.4	2,500	103.3						
1901	502	20.4	312	12.7	27	1.1	645	26.2	163	6.6	79	3.2	2,152	87.5	2,548	103.6			88	3.6		
1902	504	20.2	277	11.1	42	1.7	608	24.3	289	11.6	238	9.5	2,088	83.6	2,462	98.5			114	4.6		
1903	686	27.0	200	7.9	29	1.1	606	23.9	383	15.1	176	6.9	2,155	84.9	2,562	101.0			130	5.2		
1904	515	20.0	210	8.1	26	1.0	641	24.9	148	5.7	194	7.5	2,306	89.5	2,761	107.2			101	4.0		
1905	478	18.3	123	4.7	74	2.8	636	24.3	131	5.0	123	4.7	2,288	87.5	2,732	104.4			89	3.5		
1906	472	17.8	227	8.6	3	0.1	721	27.2	469	17.7	251	9.5	2,303	86.8	2,737	103.1			89	3.4		
1907	421	15.6	159	5.9	8	0.3	594	22.1	223	8.3	256	9.5	2,338	86.8	2,728	101.3			94	3.6		
1908	343	12.6	194	7.1	11	0.4	687	25.1	305	11.2	121	4.4	2,249	82.3	2,706	99.0			118	4.5		
1909	395	14.3	275	9.9	4	0.1	653	23.6	217	7.8	270	9.7	2,237	80.7	2,629	94.9			127	4.8		
1910	495	17.6	297	10.6	121	4.3	654	23.3	318	11.3	251	8.9	2,273	80.9	2,756	98.1	52	1.9	65	2.3		
1911	473	16.3	208	7.2	7	0.2	551	19.0	254	8.8	200	6.9	2,284	78.9	2,766	95.5	55	1.9	104	3.6		
1912	465	15.6	186	6.2	3	0.1	534	17.9	252	8.5	118	4.0	2,289	76.8	2,744	92.0	48	1.7	90	3.1		
1913	676	22.0	283	9.2	5	0.2	538	17.5	292	9.5	258	8.4	2,243	73.1	2,703	88.1	43	1.5	136	4.6		
1914	507	16.1	177	5.6	2	0.1	400	12.7	304	9.6	180	5.7	2,325	73.7	2,799	88.8	41	1.4	160	5.3		
1915	354	10.9	107	3.3	5	0.2	353	10.9	236	7.3	101	3.1	2,527	78.0	2,986	92.2	36	1.2	163	5.3		
1916	507	15.2	177	5.3	2	0.1	424	12.8	228	6.9	363	10.9	2,573	77.4	3,070	92.3	141	4.6	206	6.7		
1917	851	24.9	340	10.0	9	0.3	386	11.3	360	10.6	259	7.6	2,779	81.5	3,310	97.0	44	1.4	224	7.1		
1918	686	19.6	181	5.2	18	0.5	337	9.6	496	14.2	270	7.7	3,059	87.5	3,612	103.3	58	1.8	290	9.1		
1919	764	21.3	179	5.0	10	0.3	272	7.6	172	4.8	183	5.1	2,620	73.1	3,127	87.3	80	2.2	299	8.2		
1920	888	24.2	305	8.3	14	0.4	297	8.1	511	13.9	436	11.9	2,645	72.1	3,149	85.8	30	0.8	314	8.4		
1921	954	25.2	334	8.8	12	0.3	285	7.5	316	8.3	58	1.5	2,285	60.4	2,736	72.3	100	2.6	226	5.9	14	0.4
1922	620	15.9	217	5.6	20	0.5	192	4.9	232	5.9	232	5.9	2,232	57.2	2,654	68.0	21	0.5	186	4.7	6	0.2
1923	675	16.8	304	7.6	13	0.3	202	5.0	323	8.0	258	6.4	2,410	59.9	2,836	70.6	18	0.5	262	6.8	5	0.1
1924	470	11.4	265	6.4	226	5.5	149	3.6	169	4.1	221	5.3	2,474	59.8	2,952	71.3	116	3.0	271	7.0	13	0.3
1925	358	8.4	208	4.9	22	0.5	157	3.7	260	6.1	69	1.6	2,410	56.6	2,830	66.5	31	0.7	282	6.6	27	0.6
1926	677	15.5	235	5.4	4	0.1	119	2.7	355	8.1	577	13.2	2,601	59.5	3,041	69.5	34	0.8	327	7.5	12	0.3
1927	516	11.5	168	3.7	—	—	94	2.1	201	4.5	67	1.5	2,514	56.0	2,952	65.7	69	1.5	305	6.8	16	0.4
1928	384	8.3	178	3.9	2	0.0	83	1.8	219	4.8	303	6.6	2,647	57.4	3,108	67.5	27	0.6	384	8.4	19	0.4
1929	498	10.5	145	3.1	9	0.2	81	1.7	255	5.4	146	3.1	2,685	56.8	3,140	66.5	50	1.1	397	8.4	19	0.4
1930	299	6.2	130	2.7	9	0.2	87	1.8	176	3.6	231	4.8	2,443	50.5	2,912	60.1	39	0.8	395	8.2	12	0.2
1931	172	3.5	122	2.5	4	0.1	73	1.5	190	3.9	28	0.6	2,263	46.3	2,660	54.5	108	2.2	361	7.4	3	0.1
1932	106	2.2	112	2.3	1	0.0	56	1.1	199	4.0	183	3.7	2,101	42.7	2,463	50.0	23	0.5	377	7.7	2	0.0
1933	112	2.3	157	3.2	—	—	50	1.0	153	3.1	111	2.2	1,996	40.2	2,348	47.3	5	0.1	327	6.6	7	0.1
1934	36	0.8	171	3.4	—	—	65	1.3	141	2.8	36	0.7	1,909	38.1	2,199	43.9	25	0.5	402	8.0	10	0.2
1935	58	1.1	98	1.9	—	—	34	0.7	132	2.6	184	3.6	1,741	34.5	2,044	40.5	32	0.6	393	7.8	3	0.1
1936	52	1.0	114	2.2	—	—	37	0.7	107	2.1	12	0.2	1,816	35.7	2,100	41.3	21	0.4	394	7.7	6	0.1
1937	72	1.4	148	2.9	1	0.0	29	0.6	132	2.6	11	0.2	1,860	36.2	2,119	41.3	51	1.0	401	7.8	8	0.2
1938	44	0.9	87	1.7	—	—	23	0.4	116	2.2	100	1.9	1,633	31.6	1,866	36.1	10	0.2	401	7.8	8	0.2
1939	25	0.5	69	1.3	—	—	25	0.5	76	1.5	29	0.6	1,651	31.7	1,880	36.1	40	0.8	389	7.5	4	0.1
1940	20	0.4	41	0.8	1	0.0	11	0.2	59	1.1	19	0.4	1,547	29.4	1,752	33.3	72	1.4	591	11.2	3	0.0
1941	18	0.3	32	0.6	1	0.0	14	0.3	91	1.7	65	1.2	1,532	28.2	1,723	31.7	18	0.3	537	9.9	1	0.0
1942	24	0.4	23	0.4	—	—	5	0.1	72	1.3	8	0.1	1,630	29.4	1,827	33.0	10	0.2	559	10.1	7	0.1
1943	21	0.4	11	0.2	—	—	9	0.2	101	1.9	89	1.7	1,588	29.5	1,802	33.5	27	0.5	579	10.8	3	0.0
1944	32	0.6	7	0.1	1	0.0	7	0.1	33	0.6	49	0.9	1,544	28.7	1,748	32.5	45	0.8	543	10.1	2	0.0
1945	46	0.8	9	0.2	—	—	3	0.1	36	0.7	10	0.2	1,591	29.3	1,758	32.3	20	0.4	527	9.7	2	0.0
1946	27	0.5	3	0.1	—	—	6	0.1	44	0.8	47	0.8	1,645	28.8	1,843	32.3	89	1.6	547	9.6	—	—
1947	23	0.4	6	0.1	—	—	5	0.1	63	1.0	5	0.1	1,483	24.4	1,643	27.1	29	0.5	502	8.3	3	0.0
1948	8	0.1	1	0.0	—	—	4	0.1	9	0.1	43	0.7	1,395	22.5	1,561	25.2	54	0.9	512	8.3	—	—
1949	11	0.2	4	0.1	—	—	1	0.0	22	0.3	33	0.5	1,254	19.7	1,400	22.0	216	3.4	455	7.2	—	—
1950	2	0.0	1	0.0	—	—	5	0.1	28	0.4	28	0.4	1,134	17.8	1,270	19.9	128	2.0	325	5.1	1	0.0
1951	6	0.1	—	—	—	—	1	0.0	21	0.3	11	0.2	1,049	16.0	1,154	17.6	67	1.0	299	4.6	1	0.0
1952	2	0.0	—	—	—	—	—	—	8	0.1	17	0.3	689	10.3	775	11.6	213	3.2	174	2.6	2	0.0
1953	2	0.0	1	0.0	—	—	—	—	11	0.2	16	0.2	536	7.8	607	8.9	108	1.6	182	2.7	1	0.0
1954	3	0.0	3	0.0	—	—	—	—	17	0.2	17	0.2	471	6.7	530	7.5	89	1.3	139	2.0	2	0.0
1955	1	0.0	1	0.0	—	—	1	0.0	8	0.1	10	0.1	435	6.0	477	6.6	32	0.4	115	1.6	1	0.0
1956	8	0.1	3	0.0	—	—	—	—	6	0.1	26	0.3	426	5.7	466	6.2	22	0.3	114	1.5	4	0.1
1957	1	0.0	—	—	—	—	—	—	6	0.1	23	0.3	403	5.2	442	5.7	15	0.2	105	1.3	4	0.1
1958	—	—	—	—	—	—	—	—	1	0.0	18	0.2	357	4.5	395	5.0	37	0.5	84	1.1	8	0.1
1959	1	0.0	2	0.0	—	—	1	0.0	5	0.1	11	0.1	335	4.2	370	4.6	17	0.2	84	1.1	4	0.1
1960	2	0.0	1	0.0	—	—	—	—	1	0.0	17	0.2	364	4.7	390	5.0	4	0.1	79	1.0	7	0.1
1961	1	0.0	1	0.0	—	—	—	—	2	0.0	13	0.2	307	3.9	332	4.2	—	—	71	0.9	7	0.1
1962	2	0.0	1	0.0	—	—	—	—	2	0.0	8	0.1	307	3.9	331	4.2	2	0.0	94	1.2	3	0.0
1963	—	—	—	—	—	—	—	—	—	—	27	0.2	276	3.4	299	3.7	1	0.0	72	0.9	1	0.0
1964	—	—	—	—	—	—	—	—	2	0.0	11	0.1	288	3.6	315	3.9	1	0.0	66	0.8	3	0.0
1965	—	—	—	—	—	—	—	—	—	—	5	0.1	261	3.2	285	3.5	—	—	65	0.8	2	0.0
1966	1	0.0	—	—	—	—	—	—	—	—	7	0.1	284	3.4	301	3.6	—	—	63	0.8	—	—
1967	—	—	—	—	—	—	—	—	—	—	3	0.0	206	2.4	226	2.6	—	—	44	0.5	1	0.0
1968	—	—	1	0.0	—	—	—	—	—	—	—	—	203	2.3	262	3.0	2	0.0	29	0.3	—	—
1969	—	—	—	—	—	—	—	—	—	—	—	—	147	1.7	201	2.3	—	—	26	0.3	1	0.0
1970	—	—	2	0.0	—	—	—	—	—	—	1	0.0	134	1.5	180	2.0	—	—	17	0.2	2	0.0
1971	—	—	4	0.0	—	—	—	—	—	—	—	—	122	1.4	173	1.9	—	—	18	0.2	—	—
1972	—	—	1	0.0	—	—	—	—	—	—	—	—	111	1.2	157	1.7	1	0.0	12	0.1	—	—
1973	—	—	—	—	—	—	—	—	1	0.0	2	0.0	101	1.1	138	1.5	3	0.0	12	0.1	—	—
1974	—	—	1	0.0	—	—	—	—	2	0.0	—	—	109	1.2	142	1.6	3	0.0	11	0.1	—	—
1975	—	—	—	—	—	—	—	—	1	0.0	1	0.0	81	0.9	110	1.2	5	0.1	10	0.1	1	0.0
1976	—	—	—	—	—	—	—	—	—	—	—	—	80	0.9	102	1.1	6	0.1	11	0.1	—	—
1977	—	—	1	0.0	—	—	—	—	—	—	—	—	67	0.7	97	1.1	6	0.1	3	0.0	—	—
1978	—	—	—	—	—	—	—	—	1	0.0	4	0.0	60	0.7	80	0.9	2	0.0	5	0.1	—	—

[1] From 1901 through 1920, syphilis includes all other venereal diseases; beginning with 1968 excludes aortic aneurysms not specified as syphilitic.

[2] Effective January 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, deaths and rates prior to 1975 are not directly comparable to the figures in 1975 and later years.

TABLE 4.8

NUMBER OF DEATHS AND DEATH RATES BY SPECIFIED CAUSES

MICHIGAN RESIDENTS, 1900-1978

(Rates per 100,000 population)

Year	Heart Disease[1]		Cancer (all forms)[2]		Vascular Lesions Affecting Central Nervous System[3]		Accidents (all forms)[4]		Motor Vehicle Accidents[5]		Diabetes		Pneumonia[6]		Immaturity[7]		General Arterio-sclerosis[8]	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1900	2,836	117.1	1,460	60.3	2,138	88.2	1,740	71.8			224	9.3	2,388	98.6	620	25.6		
1901	3,040	123.6	1,484	60.3	2,147	87.3	1,901	77.3			264	10.7	2,901	117.9	524	21.3		
1902	3,302	132.1	1,483	59.3	2,097	83.9	1,796	71.9			289	11.6	2,637	105.5	608	24.3		
1903	3,702	145.9	1,694	66.8	2,321	91.5	2,017	79.5			265	10.4	2,607	102.7	542	21.4		
1904	3,981	154.5	1,728	67.1	2,431	94.3	2,035	79.0			298	11.6	2,646	102.7	632	24.5		
1905	3,715	142.0	1,693	64.7	2,405	91.9	2,034	77.8			267	10.2	2,417	92.4	751	28.7		
1906	3,933	148.2	1,736	65.4	2,554	96.2	2,126	80.1			311	11.7	2,621	98.7	830	31.3		
1907	4,269	158.5	1,747	64.9	2,690	99.9	2,2[illegible]	82.0			352	13.1	3,018	112.0	855	31.7		
1908	4,202	153.8	1,9[illegible]1	70.3	2,630	96.3	2,036	74.5			359	13.1	2,313	84.7	975	35.7		
1909	4,354	157.1	1,948	70.3	2,739	98.8	1,903	68.7			374	13.5	2,265	81.7	1,152	41.6		
1910	4,581	163.0	2,105	74.9	3,091	110.0	2,158	76.8	49	1.7	398	14.2	2,785	99.1	2,050	72.9		
1911	4,539	160.2	2,142	74.0	2,916	100.7	2,121	73.2	44	1.5	373	12.9	2,763	95.4	2,223	76.8		
1912	5,324	178.5	2,291	76.8	2,707	90.8	2,005	67.2	75	2.5	448	15.0	2,796	93.8	2,340	78.5		
1913	4,90[illegible]	160.0	2,368	77.8	2,834	92.4	2,333	76.1	132	4.3	483	15.7	3,062	100.5	2,460	80.8		
1914	5,12[illegible]	162.6	2,414	76.6	2,880	94.9	2,108	66.8	120	3.8	503	16.0	2,909	92.2	2,391	75.8		
1915	5,536	171.0	2,667	79.2	3,364	104.5	2,219	68.5	190	5.9	496	15.4	3,229	99.7	2,207	68.1		
1916	5,819	175.0	2,710	81.5	3,559	107.0	2,853	85.8	257	7.7	500	15.0	3,698	111.2	2,498	75.1		
1917	6,103	176.9	2,765	81.1	3,703	108.6	2,975	85.8	335	9.8	569	16.7	4,455	130.6	2,369	69.5		
1918	6,091	174.2	2,931	83.8	3,493	99.9	2,5[illegible]9	74.3	279	8.0	591	16.9	7,238	207.0	2,362	67.5		
1919	5,651	157.7	2,990	83.5	3,483	97.2	2,612	72.8	3[illegible]3	9.2	559	15.6	4,081	113.9	2,193	60.9		
1920	6,732	183.5	3,158	86.1	3,876	105.7	2,646	72.1	397	10.8	577	15.7	5,794	157.9	2,512	68.5		
1921	6,176	163.1	3,375	89.1	3,931	103.8	2,476	65.4	403	10.6	586	15.5	2,845	75.3	2,481	65.5		
1922	6,897	176.7	3,481	89.2	4,041	103.5	2,475	63.4	529	13.6	650	16.7	3,728	95.5	1,793	45.9		
1923	7,268	180.7	3,545	88.2	4,420	109.9	2,826	70.3	677	16.8	635	15.8	4,719	117.4	1,911	47.5		
1924	6,985	168.8	3,824	92.4	4,241	102.5	3,090	74.7	1,001	24.2	661	16.0	3,332	80.5	1,970	47.6		
1925	7,540	177.2	3,858	90.7	4,[illegible]23	108.6	3,278	77.0	1,103	25.9	746	17.5	3,294	77.4	1,987	46.7		
1926	8,281	189.4	4,087	93.5	4,663	106.6	3,557	81.3	1,221	27.9	743	17.0	4,440	101.5	1,986	45.4		
1927	8,760	193.5	4,264	95.0	4,378	97.5	3,634	80.9	1,389	30.9	819	18.2	3,543	78.9	1,911	42.6		
1928	9,786	212.4	4,381	95.1	4,718	102.4	3,704	80.4	1,429	31.0	905	19.6	4,518	98.1	1,846	40.1		
1929	10,185	215.8	4,571	96.7	4,694	99.3	3,913	82.8	1,552	32.8	935	19.8	4,216	89.2	1,853	39.2		
1930	9,947	205.4	4,572	94.4	4,533	93.6	3,805	78.6	1,572	32.5	880	18.2	3,321	68.6	1,805	37.3	1,047	21.6
1931	10,206	209.0	4,763	97.5	4,388	89.8	3,630	74.3	1,516	31.0	950	19.5	2,883	59.0	1,473	30.2	1,005	20.6
1932	11,162	226.6	4,935	100.2	4,518	91.7	3,179	64.5	1,229	25.0	1,121	22.8	3,238	65.7	1,372	27.9	948	19.2
1933	11,509	231.7	5,055	101.8	4,318	86.9	3,304	66.5	1,278	25.7	1,103	22.2	2,756	55.5	1,364	27.5	966	19.5
1934	11,824	236.1	5,370	107.2	4,485	89.6	3,774	75.4	1,511	30.2	1,100	22.0	3,466	69.2	1,419	28.3	914	18.3
1935	12,456	246.7	5,399	106.9	4,420	87.5	3,771	74.7	1,676	33.2	1,228	24.3	3,801	75.3	1,389	27.5	897	17.8
1936	13,374	262.7	5,752	113.0	4,705	92.4	5,246	103.1	1,924	37.8	1,266	24.9	4,096	80.5	1,395	27.4	997	19.6
1937	13,233	257.8	5,732	111.7	4,378	85.3	4,580	89.2	2,187	42.6	1,255	24.5	4,098	79.8	1,415	27.6	1,168	22.8
1938	13,867	268.4	6,059	117.1	4,543	87.8	3,608	69.7	1,490	28.8	1,263	24.8	2,869	55.5	1,484	28.7	869	16.8
1939	14,898	285.7	6,298	120.7	4,415	84.7	3,761	72.1	1,553	29.8	1,360	26.1	2,803	53.8	1,396	26.8	918	17.6
1940	15,480	294.5	6,513	123.9	4,690	89.2	3,961	75.4	1,743	33.2	1,408	26.8	2,478	47.1	1,298	24.7	941	17.9
1941	15,761	289.8	6,551	120.5	4,698	86.4	4,450	81.3	2,156	39.6	1,382	25.4	2,235	41.1	1,353	24.9	906	16.7
1942	16,016	289.2	6,646	120.0	4,841	87.4	3,685	66.5	1,368	24.7	1,448	26.1	2,349	42.2	1,575	28.4	1,015	18.3
1943	17,816	331.3	7,127	132.5	5,311	98.8	3,480	64.7	1,025	19.1	1,535	28.5	2,931	54.5	1,488	27.7	1,092	20.3
1944	17,004	316.2	7,277	135.3	4,954	92.1	3,350	62.3	1,103	20.5	1,554	28.9	2,369	44.1	1,412	26.3	980	18.2
1945	17,421	320.5	7,486	137.7	5,295	97.4	3,432	63.1	1,199	22.1	1,561	28.7	1,932	35.5	1,339	24.6	970	17.8
1946	17,691	309.9	7,845	137.4	5,224	91.5	3,776	66.1	1,506	26.4	1,530	26.8	1,891	33.1	1,735	30.4	933	16.3
1947	18,412	303.4	8,188	134.9	5,426	89.4	3,848	63.4	1,499	24.7	1,618	26.7	2,089	34.4	1,953	32.2	1,031	17.0
1948	18,726	302.3	8,336	134.6	5,272	85.1	4,017	64.8	1,545	24.9	1,771	28.6	1,853	29.9	1,820	29.4	1,085	17.5
1949	19,137	301.3	8,697	136.9	5,436	85.6	3,838	60.4	1,493	23.5	1,884	29.7	1,885	29.7	1,795	28.3	1,135	17.9
1950	20,521	322.1	8,685	136.3	6,376	100.1	3,783	59.4	1,680	26.4	1,436	22.6	1,358	21.3	1,096	17.2	1,296	20.3
1951	21,118	322.6	9,187	140.4	6,579	100.5	3,916	59.8	1,806	27.6	1,374	21.0	1,619	24.7	1,232	18.8	1,312	20.0
1952	21,247	316.8	9,256	138.0	6,521	97.2	3,901	58.2	1,815	27.1	1,339	20.0	1,571	23.4	1,256	18.7	1,294	19.3
1953	22,425	327.3	9,904	144.5	7,045	102.8	4,375	63.8	2,051	29.9	1,419	20.7	1,538	22.4	1,114	16.3	1,270	18.5
1954	22,362	318.4	10,105	143.9	6,964	99.1	3,948	56.2	1,918	27.3	1,469	20.9	1,380	19.6	1,298	18.5	1,170	16.7
1955	23,440	323.9	10,297	142.3	7,362	101.7	4,213	58.2	2,129	29.4	1,418	19.6	1,538	21.3	1,272	17.6	1,237	17.1
1956	24,661	328.1	10,469	139.6	7,114	94.7	3,925	52.2	1,826	24.3	1,443	19.2	1,723	22.9	1,244	16.6	1,251	16.6
1957	25,369	325.1	10,810	138.5	7,632	97.8	3,643	46.7	1,680	21.5	1,510	19.4	2,045	26.2	1,322	16.9	1,248	16.0
1958	25,215	320.6	10,946	139.2	7,547	95.9	3,306	42.0	1,466	18.6	1,595	20.3	2,076	26.4	1,208	15.4	1,300	16.5
1959	25,323	318.1	11,113	139.6	7,700	96.7	3,666	46.1	1,587	19.9	1,715	21.5	1,810	22.7	1,201	15.1	1,403	17.6
1960	25,728	326.9	11,331	144.8	7,662	98.2	3,686	47.1	1,710	21.9	1,784	22.8	2,002	25.6	1,148	14.7	1,352	17.3
1961	25,519	322.9	11,476	145.2	7,745	98.0	3,692	46.7	1,656	21.0	1,778	22.5	1,692	21.4	1,003	12.7	1,448	18.3
1962	27,226	342.9	11,752	148.0	7,783	98.0	3,758	47.3	1,668	21.0	1,908	24.0	1,824	23.0	907	11.4	1,477	18.6
1963	27,483	342.3	12,078	150.4	8,168	101.7	4,033	50.2	2,005	25.0	2,049	25.5	1,995	24.8	816	10.2	1,652	20.6
1964	27,496	339.5	12,087	149.2	7,940	98.0	4,416	54.5	2,286	28.2	2,055	25.4	1,714	21.2	807	10.0	1,559	19.2
1965	28,134	343.1	12,419	151.5	7,769	94.8	4,494	54.8	2,271	27.7	2,153	26.3	1,987	24.2	768	9.4	1,726	21.1
1966	28,277	340.1	12,506	150.4	7,732	93.0	4,737	57.0	2,407	29.0	2,243	27.0	2,026	24.4	819	9.9	1,745	21.0
1967	28,757	333.8	13,030	151.2	7,846	91.1	4,519	52.4	2,265	26.3	2,182	25.3	1,973	22.9	718	8.3	1,730	20.1
1968	29,680	342.1	13,292	153.2	7,913	91.2	4,603	53.1	2,466	28.4	2,298	26.5	2,341	27.0	487	5.6	1,262	14.5
1969	29,386	336.6	13,328	152.6	7,708	88.2	4,766	54.6	2,379	29.5	2,188	25.1	2,229	25.5	459	5.3	1,289	14.8
1970	29,204	329.1	13,551	152.7	7,691	86.7	4,428	49.9	2,309	26.0	2,180	24.6	2,004	22.6	436	4.9	1,174	13.2
1971	30,095	334.5	13,594	151.1	7,826	87.0	4,426	49.2	2,274	25.3	2,103	23.4	1,981	22.0	386	4.3	1,187	13.2
1972	30,865	342.4	14,045	155.8	7,999	88.7	4,566	50.7	2,450	27.2	2,222	24.7	2,009	22.3	316	3.5	1,153	12.8
1973	29,944	330.5	14,220	156.9	7,987	88.1	4,630	51.1	2,389	26.4	2,074	22.9	1,958	21.6	263	2.9	1,142	12.6
1974	29,220	321.2	14,241	156.5	7,645	84.0	4,211	46.3	1,929	21.2	1,940	21.3	1,637	18.0	240	2.6	1,187	13.0
1975	28,298	309.0	14,445	157.7	7,262	79.3	4,002	43.7	1,841	20.1	1,819	19.9	1,655	18.5	187	2.0	1,119	12.2
1976	29,233	321.1	14,880	163.4	7,354	80.8	3,912	43.0	1,993	21.9	1,719	18.9	1,812	19.9	186	2.0	1,207	13.3
1977	28,895	316.5	15,125	165.7	6,818	74.7	3,945	43.2	1,993	21.8	1,615	17.7	1,639	18.0	155	1.7	1,164	12.8
1978	29,406	320.8	15,249	165.9	6,520	71.0	3,970	43.2	2,138	23.3	1,551	16.9	1,828	19.9	152	1.7	1,146	12.5

[1] Heart disease includes all forms.
[2] Cancer includes leukemias, aleukemias, and Hodgkin's disease beginning with 1921.
[3] Vascular Lesions Affecting Central Nervous System category is now called Cerebrovascular disease.
[4] Accidents exclude injuries undetermined whether accidentally or purposely inflicted since 1968.
[5] Motor vehicle accidents do not include collision with heavier vehicles from 1910 through 1922. Motorcycle accidents are included beginning with 1923.
[6] Deaths due to Pneumonia now include Pneumonia of the Newborn since 1968.
[7] Deaths related to Immaturity include Congenital Debility from 1913 through 1921.
[8] General Arteriosclerosis is called Arteriosclerosis since 1968.

TABLE 4.9

SELECTED VITAL STATISTICS BY COUNTY
MICHIGAN RESIDENTS, 1978

AREA	Population Estimates [1]	Live Births	Low Weight Live Births	Deaths	Infant Deaths	Neonatal Deaths	Perinatal Deaths	Fetal Deaths	Marriages [2]	Divorces [2]
STATE	9,189,000	138,802	10,013	74,773	1,911	1,281	2,322	1,221	88,333	45,029
Alcona	9,300	104	8	125	2	2	3	1	70	47
Alger	10,000	134	2	103	2	2	4	3	89	-
Allegan	74,000	1,307	76	599	17	9	15	6	765	346
Alpena	33,400	480	27	278	6	5	4	-	344	91
Antrim	16,300	254	12	169	2	2	1	-	154	56
Arenac	13,500	200	10	151	3	2	4	3	131	49
Baraga	8,600	157	11	93	-	-	-	-	78	35
Barry	42,900	661	41	339	10	4	10	6	358	204
Bay	121,600	1,880	99	913	18	13	23	12	1,117	513
Benzie	10,600	152	10	110	2	2	1	1	131	47
Berrien	167,300	2,702	221	1,492	58	30	45	19	1,923	974
Branch	38,900	589	27	406	8	1	5	4	712	237
Calhoun	140,700	2,173	160	1,229	32	26	41	19	1,544	840
Cass	45,400	694	36	383	7	4	12	9	437	245
Charlevoix	19,400	324	24	165	4	3	5	2	236	106
Cheboygan	19,800	316	13	204	1	1	1	-	193	105
Chippewa	30,500	428	23	279	5	4	7	3	319	137
Clare	23,000	322	18	292	4	3	4	2	245	102
Clinton	55,000	867	54	313	5	4	10	7	418	205
Crawford	9,100	146	12	104	3	2	5	3	113	46
Delta	40,300	592	32	403	14	13	12	2	377	130
Dickinson	26,100	347	18	283	7	4	5	3	293	110
Eaton	82,100	1,179	72	501	9	7	19	12	739	418
Emmet	21,500	338	23	225	2	2	6	2	252	92
Genesee	451,000	7,313	585	3,385	113	80	141	70	4,655	2,535
Gladwin	18,300	244	14	186	5	1	2	1	172	66
Gogebic	19,600	253	19	286	-	-	1	1	243	64
Grand Traverse	48,400	833	40	426	8	6	21	15	612	264
Gratiot	39,300	673	47	353	9	4	8	6	398	121
Hillsdale	41,200	641	46	373	7	7	17	10	431	217
Houghton	37,300	502	13	464	2	1	8	7	312	141
Huron	35,800	568	31	420	3	3	9	6	353	98
Ingham	271,000	4,369	315	1,588	46	31	59	31	3,205	1,580
Ionia	49,700	805	49	423	10	6	7	3	471	191
Iosco	30,500	564	28	262	6	6	9	6	290	128
Iron	14,700	186	14	191	3	3	1	-	148	41
Isabella	52,100	717	28	290	9	6	9	3	448	184
Jackson	150,200	2,197	117	1,209	28	14	26	14	1,529	735
Kalamazoo	208,000	2,916	186	1,385	34	24	40	20	2,211	1,180
Kalkaska	11,400	199	13	94	5	4	5	2	107	46
Kent	435,800	7,319	451	3,530	88	52	104	59	4,944	2,421
Keweenaw	2,200	36	1	29	-	-	1	1	19	7
Lake	7,000	118	8	110	-		1	1	61	34
Lapeer	57,100	1,104	59	435	18	9	14	6	630	298
Leelanau	13,400	135	12	127	4	2	5	4	105	-
Lenawee	87,300	1,459	73	701	7	5	12	10	865	466
Livingston	92,300	1,361	79	518	19	12	25	14	792	470
Luce	7,300	98	3	70	-	-	1	1	69	20
Mackinac	11,200	138	7	130	2	2	2	1	68	27
Macomb	693,400	9,299	559	4,344	91	68	138	73	6,497	3,166
Manistee	22,500	302	20	245	1	1	3	2	212	95
Marquette	73,800	1,469	81	540	18	15	23	9	782	300
Mason	24,700	363	25	253	7	4	6	4	260	108
Mecosta	34,800	442	23	218	10	6	9	5	282	98
Menominee	26,500	437	30	288	8	6	5	-	359	65
Midland	69,700	1,090	58	455	12	10	19	9	723	363
Missaukee	9,700	189	14	104	2	-	1	1	93	22
Monroe	131,800	1,878	108	869	20	15	28	15	1,280	626
Montcalm	45,400	736	43	463	10	8	9	3	514	227
Montmorency	7,700	113	6	81	-	-	-	-	57	-
Muskegon	158,800	2,518	168	1,315	32	19	45	27	1,566	930
Newaygo	33,400	545	39	333	6	3	8	6	316	146
Oakland	1,009,400	13,637	927	6,815	175	115	205	101	9,763	5,860
Oceana	21,000	381	13	224	5	3	3	-	174	103
Ogemaw	16,800	225	18	212	3	2	4	2	181	60
Ontonagon	10,700	125	5	115	1	1	1	-	67	37
Osceola	18,200	279	21	179	7	4	9	7	172	-
Oscoda	6,700	98	11	79	-	-	-	-	60	26
Otsego	14,300	260	13	114	4	3	3	1	140	80
Ottawa	149,400	2,564	118	972	23	13	24	14	1,349	446
Presque Isle	14,100	211	5	135	5	2	5	3	128	43
Roscommon	16,200	182	13	183	5	3	7	5	142	67
Saginaw	227,700	3,700	260	1,687	47	37	68	40	2,168	1,107
St. Clair	133,500	2,071	144	1,191	29	16	26	12	1,287	624
St. Joseph	51,800	923	60	461	14	8	18	12	550	262
Sanilac	40,200	617	40	387	6	3	8	5	375	158
Schoolcraft	9,300	135	6	104	4	3	4	1	119	37
Shiawassee	70,300	1,143	51	459	10	5	12	7	733	367
Tuscola	55,100	916	52	429	7	4	12	9	524	224
Van Buren	62,300	1,036	76	588	18	12	19	13	596	322
Washtenaw	254,300	3,658	232	1,298	45	30	66	40	2,650	1,543
Wayne	2,390,600	35,677	3,483	23,234	646	431	731	358	19,478	10,910
Wexford	22,800	339	23	225	4	4	10	6	289	118
County Not Stated		6	1	22	7	6	25	20		

1 - Source: U.S. Census Bureau Current Population Reports, series P-26, No. 78-22.
2 - By County of Occurrence rather than County of Residence.

TABLE 4.10

SELECTED VITAL STATISTICS RATES BY COUNTY
MICHIGAN RESIDENTS, 1978

Area	Live Births	Low Weight Live Births	Deaths	Infant Deaths	Neonatal Deaths	Perinatal Deaths	Fetal Deaths [3]	Marriages [1, 2]	Divorces [1, 2]
STATE	13.1	72.1	8.1	13.9	9.2	16.6	8.8	19.2	9.8
Alcona	11.2	76.9	13.4	19.2	19.2	28.6	9.6	15.1	10.1
Alger	13.4	14.9	10.3	14.9	14.9	29.2	22.4	17.8	-
Allegan	17.7	58.1	8.1	13.0	6.9	11.4	4.6	20.7	9.4
Alpena	14.4	56.3	8.3	12.5	10.4	8.3	-	20.6	5.4
Antrim	15.6	47.2	10.4	7.9	7.9	3.9	-	18.9	6.9
Arenac	14.8	50.0	11.2	15.0	10.0	19.7	15.0	19.4	7.3
Baraga	18.3	70.1	10.8	-	-	-	-	18.1	8.1
Barry	15.4	62.0	7.9	15.1	6.1	15.0	9.1	16.6	9.5
Bay	15.5	52.7	7.5	9.6	6.9	12.2	6.4	18.4	8.4
Benzie	14.3	65.8	10.4	13.2	13.2	6.5	6.6	24.7	8.9
Berrien	16.2	81.8	8.9	21.5	11.1	16.5	7.0	23.0	11.6
Branch	15.1	45.8	10.4	13.6	1.7	8.4	6.8	36.6	12.2
Calhoun	15.4	73.6	8.7	14.7	12.0	18.7	8.7	21.9	11.9
Cass	15.3	51.9	8.4	10.1	5.8	17.1	13.0	19.3	10.8
Charlevoix	16.7	74.1	8.5	12.3	9.3	15.3	6.2	24.3	10.9
Cheboygan	17.0	38.7	10.3	3.0	3.0	3.0	-	19.5	10.6
Chippewa	14.0	33.7	9.1	11.7	9.3	16.2	7.0	20.9	9.0
Clare	13.5	55.9	12.3	12.4	9.3	12.3	6.2	20.6	8.6
Clinton	15.8	62.3	5.7	5.8	4.6	11.4	8.1	15.9	7.5
Crawford	16.0	82.2	11.4	20.5	13.7	33.6	20.5	24.8	10.1
Delta	14.7	54.1	10.0	23.6	22.0	20.2	3.4	18.7	6.5
Dickinson	13.3	51.9	10.8	20.2	11.5	14.3	8.6	22.9	8.4
Eaton	14.4	61.1	6.1	7.6	5.9	16.0	10.2	18.0	10.2
Emmet	15.7	68.0	10.5	5.9	5.9	11.8	5.9	23.4	8.6
Genesee	16.2	80.0	7.3	15.5	10.9	19.1	9.6	21.5	11.2
Gladwin	13.3	57.4	10.2	20.5	4.1	8.2	4.1	18.8	7.2
Gogebic	12.9	75.1	14.6	-	-	3.9	4.0	25.4	6.5
Grand Traverse	17.2	48.0	8.8	9.6	7.2	26.8	18.0	25.3	10.9
Gratiot	17.1	69.8	9.0	13.4	5.9	11.8	8.9	20.3	6.2
Hillsdale	15.6	71.8	9.1	10.9	10.9	26.1	15.6	20.9	10.5
Houghton	13.5	25.9	12.4	4.0	2.0	15.7	13.9	16.7	7.6
Huron	15.9	54.6	11.7	5.3	5.3	15.7	10.6	19.7	5.5
Ingham	16.1	72.1	5.9	10.5	7.1	13.4	7.1	23.7	11.7
Ionia	16.2	60.9	8.5	12.4	7.5	8.7	3.7	19.0	7.7
Iosco	18.5	49.6	8.6	10.6	7.1	15.8	10.6	19.0	8.4
Iron	12.7	15.3	13.0	16.1	16.1	5.4	-	20.1	5.6
Isabella	13.8	39.1	5.6	12.6	8.4	12.5	4.2	17.2	7.1
Jackson	14.6	53.3	8.0	12.7	6.4	11.8	6.4	20.4	10.1
Kalamazoo	14.0	63.8	6.7	11.7	8.2	13.6	6.9	21.3	11.3
Kalkaska	17.5	65.3	8.2	25.1	20.1	24.9	10.1	18.8	8.1
Kent	16.6	61.6	8.1	12.0	7.1	14.1	8.1	22.7	11.1
Keweenaw	16.4	27.8	13.2	-	-	27.0	27.8	17.3	6.4
Lake	16.9	67.8	13.7	-	-	8.4	8.5	17.4	9.7
Lapeer	16.5	53.4	6.5	16.3	8.2	12.6	5.4	18.8	8.9
Leelanau	14.6	61.5	9.5	20.5	10.3	25.1	20.5	15.7	-
Lenawee	16.7	50.0	8.0	6.2	3.4	8.2	6.9	20.3	10.7
Livingston	14.7	58.0	5.6	14.0	8.8	18.2	10.3	17.2	10.2
Luce	13.4	30.6	9.6	-	-	10.1	10.2	18.9	5.5
Mackinac	12.3	50.7	11.6	14.3	14.5	16.4	7.2	15.7	4.8
Macomb	13.4	60.1	6.3	9.8	7.3	14.7	7.9	18.7	9.1
Manistee	13.6	66.2	10.9	3.3	3.3	9.9	6.6	18.8	8.4
Marquette	19.9	55.1	7.4	12.3	10.2	15.6	6.1	21.2	8.1
Mason	14.7	68.9	10.2	19.3	11.0	16.3	11.0	21.1	8.7
Mecosta	12.7	52.0	6.3	22.6	13.6	20.1	11.3	16.2	5.6
Menominee	16.5	68.6	10.9	18.3	13.7	11.4	-	27.1	4.9
Midland	15.6	53.2	6.5	11.0	9.2	17.3	8.3	20.7	10.4
Missaukee	19.5	74.1	10.7	10.6	-	5.3	5.3	19.2	4.5
Monroe	14.2	57.5	6.6	10.7	8.0	14.8	8.0	19.4	9.5
Montcalm	17.5	54.2	10.2	12.6	10.1	11.3	3.8	22.6	10.0
Montmorency	15.5	50.4	10.5	-	-	-	-	14.8	-
Muskegon	15.9	66.7	8.3	12.7	7.5	17.7	10.7	19.7	11.7
Newaygo	16.3	71.6	10.0	11.0	5.5	14.5	11.0	18.9	8.7
Oakland	13.5	68.0	6.8	12.8	8.4	14.9	7.4	19.3	11.6
Oceana	18.1	36.1	10.7	13.1	7.9	7.9	-	16.6	9.8
Ogemaw	13.4	80.0	12.6	13.3	8.9	17.6	8.9	21.5	7.1
Ontonagon	11.7	40.0	10.7	8.0	8.0	8.0	-	12.5	6.9
Osceola	15.3	75.3	9.8	25.1	14.3	31.5	25.1	18.9	-
Oscoda	14.6	112.2	11.8	-	-	-	-	17.9	7.8
Otsego	18.2	50.0	8.0	15.4	11.5	11.5	3.8	19.6	11.2
Ottawa	17.2	46.0	6.5	9.0	5.1	9.3	5.5	18.1	6.0
Presque Isle	15.0	23.7	9.6	23.7	9.5	23.4	14.2	18.2	6.1
Roscommon	11.2	71.4	11.3	27.5	16.5	37.4	27.5	17.5	8.3
Saginaw	16.2	70.3	7.4	12.7	10.0	18.2	10.8	19.0	9.7
St. Clair	15.5	69.5	8.9	14.0	7.7	12.5	5.8	19.3	9.3
St. Joseph	17.8	65.0	8.9	15.2	8.7	19.3	13.0	21.2	10.1
Sanilac	15.3	64.8	9.6	9.7	4.9	12.9	8.1	18.7	7.9
Schoolcraft	14.5	44.4	11.2	29.6	22.2	29.4	7.4	25.6	8.0
Shiawassee	16.3	44.6	6.5	8.7	4.4	10.4	6.1	20.9	10.4
Tuscola	16.6	56.8	7.8	7.6	4.4	13.0	9.8	19.0	8.1
Van Buren	16.6	73.4	9.4	17.4	11.6	18.1	12.5	19.1	10.3
Washtenaw	14.4	63.4	5.1	12.3	8.2	17.8	10.9	20.8	12.1
Wayne	14.9	97.6	9.7	18.1	12.1	20.3	10.0	16.3	9.1
Wexford	14.9	67.8	9.9	11.8	11.8	29.0	17.7	25.4	10.4

1 - By County of Occurrence
2 - Rate of persons per population rather than events per population
3 - Ratio per 1,000 live births

TABLE 4.11

LIVE BIRTHS BY AGE OF MOTHER BY COUNTY, MICHIGAN RESIDENTS, 1978

COUNTY	AGE OF MOTHER													
	Total	Under 15	15	16	17	18	19	15-19	20-24	25-29	30-34	35-39	Over 40	Age Not Stated
STATE	138,602	345	984	2,367	4,248	6,115	7,773	21,487	49,498	43,744	18,367	4,562	779	20
Alcona	104	-	-	1	2	3	10	16	42	30	12	-	-	-
Alger	134	1	2	1	4	5	12	24	57	33	16	3	-	-
Allegan	1,307	1	3	23	36	51	68	181	507	420	159	32	7	-
Alpena	480	-	4	7	21	29	32	93	162	154	47	22	2	-
Antrim	254	-	2	4	5	23	15	49	101	66	27	9	2	-
Arenac	200	1	2	2	9	13	11	37	94	43	17	8	-	-
Baraga	157	1	-	4	3	10	7	24	59	39	21	8	5	-
Barry	661	1	2	4	22	20	33	81	263	222	71	19	4	-
Bay	1,880	1	17	22	52	82	92	265	703	621	227	57	5	1
Benzie	152	-	2	3	7	6	9	27	58	45	19	3	-	-
Berrien	2,702	11	46	61	116	151	182	558	979	769	311	63	11	-
Branch	589	1	8	5	20	25	43	101	262	168	61	14	2	-
Calhoun	2,171	7	16	46	88	109	135	394	825	677	215	49	5	1
Cass	694	4	9	18	32	37	44	140	257	192	76	18	7	-
Charlevoix	324	-	2	3	10	12	19	46	112	103	51	12	-	-
Cheboygan	336	-	4	6	8	26	17	61	116	111	29	18	1	-
Chippewa	428	1	-	6	14	23	32	75	176	116	42	14	3	1
Clare	322	-	2	4	11	16	16	49	134	97	34	7	1	-
Clinton	867	1	4	11	14	32	30	91	291	312	130	35	7	-
Crawford	146	-	2	1	2	5	13	23	59	42	19	1	2	-
Delta	592	-	4	4	11	23	30	72	232	186	74	27	1	-
Dickinson	347	-	-	2	6	14	22	46	140	111	44	5	3	-
Eaton	1,179	1	6	11	30	44	49	140	442	405	150	37	4	-
Emmet	338	-	2	-	6	10	13	31	113	139	41	8	6	-
Genesee	7,313	20	81	185	260	408	472	1,406	2,835	2,005	812	194	39	-
Gladwin	244	-	2	3	11	11	14	41	95	63	32	12	1	-
Gogebic	253	-	3	3	8	15	19	48	82	74	36	8	5	-
Gd. Traverse	833	1	3	8	16	28	35	90	295	287	129	26	5	-
Gratiot	673	1	2	10	22	41	34	109	275	210	65	13	-	-
Hillsdale	641	1	3	5	30	34	56	128	265	163	61	21	2	-
Houghton	502	-	1	3	11	16	25	56	172	160	72	33	9	-
Huron	568	-	1	10	20	29	38	98	227	157	61	15	9	1
Ingham	4,369	9	20	71	94	175	211	571	1,523	1,503	609	131	22	1
Ionia	605	1	6	18	31	39	48	142	326	231	81	19	5	-
Iosco	564	1	1	5	7	22	51	86	283	130	50	11	3	-
Iron	186	1	-	4	5	11	13	33	71	55	19	6	1	-
Isabella	717	-	3	9	23	26	46	107	277	231	77	21	4	-
Jackson	2,197	5	19	43	59	97	126	344	843	705	234	56	10	-
Kalamazoo	2,916	5	11	44	80	117	149	403	955	1,032	422	57	12	-
Kalkaska	199	-	3	2	7	12	20	44	74	58	19	[illegible]	[illegible]	[illegible]
Kent	7,319	19	45	111	214	291	399	1,060	2,597	2,476	910	211	46	-
Keweenaw	16	-	-	1	1	1	1	4	15	8	1	4	-	-
Lake	118	1	7	1	8	10	13	39	32	32	11	5	1	-
Lapeer	1,104	-	3	15	42	65	54	179	461	312	109	36	7	-
Leelanau	195	-	-	2	1	4	11	18	67	67	37	6	-	-
Lenawee	1,459	1	8	21	42	67	70	208	558	467	182	40	3	-
Livingston	1,361	-	3	15	33	36	47	134	425	492	251	54	5	-
Luce	98	-	-	3	3	9	6	21	35	30	8	3	1	-
Mackinac	138	-	1	4	2	4	19	30	61	29	11	6	1	-
Macomb	9,299	4	27	85	162	254	390	924	3,105	3,374	1,491	343	58	-
Manistee	302	3	-	2	12	11	16	41	112	101	40	2	2	1
Marquette	1,469	3	7	12	37	52	85	193	636	438	149	38	11	1
Mason	343	-	1	2	9	14	30	56	147	101	50	8	1	-
Mecosta	442	-	1	7	15	18	29	70	166	145	45	10	6	-
Menominee	437	-	4	7	13	23	26	71	143	152	55	12	4	-
Midland	1,090	1	4	17	30	31	57	139	350	393	164	36	7	-
Missaukee	189	-	3	1	5	14	10	33	77	55	21	3	-	-
Monroe	1,878	1	10	39	63	95	125	332	717	530	229	54	15	-
Montcalm	794	1	4	9	29	47	59	148	330	203	86	24	2	-
Montmorency	119	-	1	2	3	3	10	19	61	23	10	5	1	-
Muskegon	2,518	12	31	71	89	113	161	465	945	768	254	63	11	-
Newaygo	545	1	2	9	24	28	26	89	221	168	51	11	3	1
Oakland	13,637	23	60	158	283	418	574	1,493	4,197	4,747	2,487	600	88	2
Oceana	381	1	3	4	10	13	29	59	144	114	44	14	5	-
Ogemaw	225	-	-	4	9	17	23	53	92	65	13	2	-	-
Ontonagon	125	-	-	4	3	11	11	29	53	28	11	1	2	1
Osceola	279	-	1	2	8	7	16	34	113	93	28	9	2	-
Oscoda	98	-	-	1	3	8	6	18	37	23	14	5	1	-
Otsego	240	-	-	3	10	15	16	44	97	87	22	8	2	-
Ottawa	2,564	2	5	23	59	73	101	261	851	1,002	357	78	12	1
Presque Isle	211	-	-	4	10	7	14	35	78	71	20	7	-	-
Roscommon	182	-	-	2	6	8	15	31	71	49	22	8	1	-
Saginaw	3,700	11	38	74	146	180	228	666	1,317	1,149	433	106	18	-
St. Clair	2,071	5	10	32	64	101	142	349	797	630	210	66	13	1
St. Joseph	923	-	8	10	40	43	58	159	398	241	99	21	5	-
Sanilac	617	1	5	8	17	17	32	79	265	176	83	27	5	1
Schoolcraft	135	-	2	1	7	8	10	28	52	33	18	3	1	-
Shiawassee	1,143	2	6	17	51	53	47	174	418	368	138	38	4	1
Tuscola	916	-	8	18	22	51	47	146	358	286	99	22	5	-
Van Buren	1,036	2	9	23	42	56	50	180	378	334	111	26	5	-
Washtenaw	3,658	5	20	37	74	126	143	400	1,032	1,368	681	157	15	-
Wayne	35,677	169	349	821	1,317	1,852	2,244	6,383	12,620	10,247	4,598	1,251	204	3
Wexford	339	-	2	9	14	11	28	64	125	102	40	6	2	-
County Not Stated	6	-	1	-	1	-	-	2	2	2	-	-	-	-

TABLE 4.12

VITAL STATISTICS BY SELECTED CITIES[1]
MICHIGAN RESIDENTS, 1978

Area	Live Births By Residence Number	Deaths By Residence Number	Infant Deaths-By Residence Number	Infant Deaths-By Residence Rate	Fetal Deaths By Residence Number	Fetal Deaths By Residence Ratio
Allen Park	340	305	4	11.8	3	8.8
Ann Arbor	1,352	445	20	14.8	18	13.3
Battle Creek	749	487	12	16.0	9	12.0
Bay City	702	446	8	11.4	4	5.7
Birmingham	278	224	2	7.2	4	14.4
Dearborn	1,016	1,032	7	6.9	9	8.9
Dearborn Heights	746	537	12	16.1	2	2.7
Detroit	20,195	14,387	452	22.4	241	11.9
East Detroit	478	341	4	8.4	4	8.4
East Lansing	481	90	4	8.3	5	10.4
Ferndale	385	281	6	15.6	2	5.2
Flint	3,451	1,648	68	19.7	42	12.2
Garden City	484	218	8	16.5	3	6.2
Grand Rapids	3,262	1,959	45	13.8	33	10.1
Hamtramck	292	372	2	6.8	1	3.4
Highland Park	440	317	9	20.5	5	11.4
Holland (Pt.)	431	211	4	9.3	3	7.0
Inkster	597	301	11	18.4	12	20.1
Jackson	731	513	14	19.2	4	5.5
Kalamazoo	1,355	629	20	14.8	8	5.9
Lansing (Pt.)	2,665	959	26	9.8	19	7.1
Lincoln Park	632	377	8	12.7	4	6.3
Livonia	1,104	683	14	12.7	10	9.1
Madison Heights	567	230	6	10.6	1	1.8
Midland (Pt.)	494	226	8	16.2	3	6.1
Muskegon	928	510	11	11.9	9	9.7
Oak Park	437	330	2	4.6	5	11.4
Pontiac	1,781	675	47	26.4	24	13.5
Portage	470	163	5	10.6	6	12.8
Port Huron	638	360	11	17.2	4	6.3
Roseville	794	370	8	10.1	8	10.1
Royal Oak	927	613	8	8.6	6	6.5
Saginaw	1,720	770	25	14.5	14	8.1
St. Clair Shores	790	678	5	6.3	7	8.9
Southfield	783	690	16	20.4	6	7.7
Southgate	398	221	5	12.6	2	5.0
Sterling Heights	1,537	409	13	8.5	7	4.6
Taylor	1,346	402	18	13.4	8	5.9
Troy	903	268	6	6.6	6	6.6
Warren	1,789	1,089	23	12.9	17	9.5
Westland	1,343	481	15	11.2	10	7.4
Wyandotte	548	360	7	12.8	4	7.3
Wyoming	991	385	8	8.1	6	6.1
Ypsilanti	582	207	11	18.9	9	15.5

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[1] 25,000 population or over.

TABLE 4.13
SELECTED CAUSES OF DEATH BY COUNTY
MICHIGAN RESIDENTS, 1978

Area	All Causes	Diseases of the Heart	Malignant Neoplasms	Cerebrovascular Diseases	Accidents, All Forms	(Motor Vehicle Accidents)	Diabetes Mellitus	Influenza & Pneumonia	Arteriosclerosis	Tuberculosis, All Forms	All Other Infective & Parasitic Diseases	Cirrhosis of the Liver	Nephritis & Nephrosis	Infections of Kidney	Maternal Deaths, All Forms	Suicide & Self-Inflicted Injury	Homicide & Injury Purposely Inflicted by Other Persons N.I. in War	Residual
STATE	74,773	29,406	15,249	6,520	3,970	2,138	1,551	2,003	1,146	88	549	1,351	371	86	15	1,132	931	10,413
Alcona	125	48	30	13	8	7	3	4	2	-	-	1	-	-	-	3	-	13
Alger	103	39	21	4	6	4	5	2	1	-	-	4	-	2	-	4	-	15
Allegan	599	236	110	52	42	17	12	8	16	-	4	4	1	1	-	18	2	93
Alpena	278	113	60	22	16	9	2	12	2	1	3	2	-	-	-	8	1	36
Antrim	169	51	44	23	8	5	3	6	4	-	-	1	-	-	1	-	-	28
Arenac	151	53	37	13	7	4	2	6	3	-	1	2	1	-	-	2	-	24
Baraga	93	29	24	8	6	2	3	2	-	-	-	2	-	1	-	2	1	15
Barry	339	117	74	29	29	25	10	14	5	-	2	6	-	-	-	2	1	50
Bay	913	388	192	77	59	26	14	14	9	2	4	13	-	-	-	15	8	118
Benzie	110	50	21	4	6	4	-	4	-	-	1	2	-	-	-	3	-	19
Berrien	1,492	625	277	127	78	42	37	47	31	3	19	19	5	1	-	14	11	198
Branch	406	131	76	46	28	6	9	19	22	-	3	9	-	-	-	4	-	59
Calhoun	1,229	472	245	118	63	32	35	29	30	1	4	15	5	4	1	17	6	184
Cass	383	146	84	39	26	12	11	10	5	1	1	4	1	-	-	10	3	42
Charlevoix	165	58	46	21	9	6	-	-	5	-	4	3	-	-	-	-	-	19
Cheboygan	204	81	39	20	16	9	6	5	2	-	1	2	2	-	-	3	-	27
Chippewa	279	107	59	27	14	4	7	8	5	3	2	2	-	-	-	5	-	40
Clare	292	151	61	17	12	6	1	4	1	-	5	1	1	-	-	2	-	36
Clinton	313	119	62	29	28	15	7	10	5	-	1	-	4	1	-	7	-	40
Crawford	104	42	16	11	9	3	4	5	2	-	-	-	1	1	-	1	1	11
Delta	403	150	68	39	22	11	7	24	7	1	1	9	2	-	-	8	2	63
Dickinson	283	106	60	36	20	10	6	7	9	-	1	3	-	-	-	2	1	32
Eaton	501	174	108	47	29	17	11	15	19	-	2	4	1	1	-	13	3	74
Emmet	225	86	50	36	9	6	5	3	2	-	-	2	2	-	-	1	1	28
Genesee	3,385	1,260	651	309	198	127	82	73	51	3	37	59	17	5	-	61	57	522
Gladwin	186	81	34	12	11	6	5	5	3	-	-	-	1	-	-	1	1	32
Gogebic	286	126	57	26	9	5	7	9	9	-	-	7	1	3	-	4	-	28
Grand Traverse	426	172	72	40	24	13	6	13	22	-	2	4	2	-	-	9	-	60
Gratiot	353	156	55	50	16	9	6	7	6	-	2	1	3	2	-	2	1	46
Hillsdale	373	135	64	32	30	15	12	19	7	1	5	2	-	-	-	10	-	56
Houghton	464	217	88	26	21	7	16	20	3	1	3	11	1	1	-	6	-	50
Huron	420	181	81	51	14	8	8	11	5	-	1	9	5	-	-	2	1	51
Ingham	1,588	607	334	111	93	49	38	56	25	2	10	20	6	2	2	31	11	240
Ionia	423	164	73	47	33	17	12	12	6	-	1	3	3	-	-	2	1	66
Iosco	262	125	50	16	12	9	4	9	-	-	1	2	-	-	-	2	1	40
Iron	191	77	33	26	9	5	2	4	2	-	1	2	-	-	-	2	-	33
Isabella	290	118	55	24	20	9	2	10	8	-	1	6	-	-	-	4	1	41
Jackson	1,209	443	260	86	70	41	31	38	53	1	7	14	5	1	-	22	10	168
Kalamazoo	1,385	502	345	121	64	39	21	44	25	-	18	9	3	-	-	24	12	197
Kalkaska	94	34	15	10	4	2	1	3	3	-	-	1	-	-	-	1	1	21
Kent	3,530	1,425	720	351	175	95	50	94	75	1	25	50	12	7	2	42	14	487
Keweenaw	29	13	6	4	1	-	1	-	-	-	-	-	-	-	-	-	-	4
Lake	110	47	23	9	2	-	-	1	4	-	1	2	1	-	-	1	3	16
Lapeer	435	150	82	52	44	28	10	7	13	2	3	7	2	-	-	3	-	60
Leelanau	127	50	25	8	7	3	3	4	2	-	1	-	-	-	-	4	-	23
Lenawee	701	267	134	63	38	28	24	10	24	1	4	9	1	-	-	5	-	121
Livingston	518	189	114	48	42	29	2	17	7	1	3	6	3	-	-	3	4	79
Luce	70	29	19	4	5	3	2	1	1	-	-	1	-	-	-	1	1	6
Mackinac	130	54	28	13	9	2	1	1	2	1	-	2	1	-	-	-	-	18
Macomb	4,344	1,818	973	334	212	130	75	93	61	2	23	90	22	1	-	71	32	537
Manistee	245	95	51	36	6	4	3	3	10	-	2	2	-	-	-	1	1	35
Marquette	548	230	98	58	25	13	7	15	7	-	1	19	3	-	-	9	1	75
Mason	253	119	52	19	14	10	6	8	4	-	1	2	-	-	-	1	-	27
Mecosta	218	86	40	13	15	7	6	4	3	-	2	1	2	-	-	2	-	44
Menominee	288	116	55	20	26	10	5	5	17	1	1	3	-	-	-	6	1	32
Midland	455	180	103	37	34	21	4	13	2	-	1	7	2	1	-	4	1	66
Missaukee	104	36	18	9	7	5	2	7	3	-	1	-	3	-	-	1	1	16
Monroe	869	329	154	64	81	40	25	24	23	1	4	8	4	2	-	19	9	122
Montcalm	463	156	91	64	26	16	12	18	13	-	3	5	2	1	-	8	2	62
Montmorency	81	29	16	9	4	2	4	2	1	-	-	3	-	-	-	1	-	12
Muskegon	1,315	503	291	123	68	42	29	35	29	-	9	10	8	6	-	15	8	181
Newaygo	333	117	66	36	35	26	4	10	11	-	4	4	2	1	-	3	-	40
Oakland	6,815	2,681	1,543	597	353	215	134	181	66	7	44	98	31	6	1	135	43	895
Oceana	224	82	52	14	18	12	5	3	6	1	1	-	1	-	-	5	1	35
Ogemaw	212	88	55	18	8	4	2	2	3	-	-	2	2	1	-	4	1	26
Ontonagon	115	35	20	8	10	5	6	-	16	-	-	3	-	-	-	-	-	17
Osceola	179	74	34	18	12	8	6	4	2	-	1	2	-	1	-	-	-	25
Oscoda	79	30	13	4	7	2	2	5	2	-	-	1	-	-	-	1	-	14
Otsego	114	46	22	10	6	2	2	5	1	-	1	4	-	-	-	-	-	17
Ottawa	972	351	209	95	55	34	20	34	26	2	2	6	2	2	-	11	2	155
Presque Isle	135	70	21	9	10	5	-	2	-	-	1	-	1	-	-	1	-	20
Roscommon	183	64	40	17	14	8	3	9	3	-	2	-	2	-	-	1	-	28
Saginaw	1,687	619	348	158	110	53	41	35	36	1	9	24	5	2	-	21	31	247
St. Clair	1,191	465	238	117	69	37	35	29	25	1	5	24	8	1	-	17	2	155
St. Joseph	461	161	108	46	27	13	9	14	4	-	-	4	1	-	-	7	2	78
Sanilac	387	159	67	47	30	19	4	5	2	-	2	3	5	-	-	7	-	56
Schoolcraft	104	48	17	9	7	3	3	1	1	-	1	2	1	-	-	-	-	14
Shiawassee	459	178	87	58	31	23	10	14	14	1	1	2	1	-	-	7	1	54
Tuscola	429	187	74	34	38	25	14	12	4	-	2	5	1	1	-	5	2	50
Van Buren	588	224	112	37	50	28	10	21	7	-	4	7	3	-	-	7	3	103
Washtenaw	1,298	449	255	129	83	50	28	44	8	2	15	19	4	1	-	41	11	209
Wayne	23,234	9,306	4,595	1,852	967	431	483	605	187	35	219	653	162	26	8	332	613	3,191
Wexford	225	75	49	23	8	4	6	15	6	-	-	1	-	-	-	3	1	38
County Not Stated	22	6	-	1	3	-	-	-	-	-	2	-	-	-	-	-	2	8

TABLE 4.14

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES BY COUNTY
MICHIGAN RESIDENTS, 1978

Area	Total	Gonorrhea	Streptococcal Sore Throat (Including Scarlet Fever)	Chicken Pox	Measles	Rubella	Hepatitis (Infectious & Serum[1])	Mumps	Tuberculosis[2]	Salmonella Infections	Syphilis	Dysentery Bacillary (Shigella)	Meningococcal Infections	Whooping Cough	All Others[3]
STATE	106,535	36,647	29.759	20,078	8,006	3,373	2,174	1,628	1,260	1,155	1,133	263	87	47	925
Alcona	15	4	4	-	5	1	-	-	-	1	-	-	-	-	-
Alger	24	8	1	8	-	4	-	2	-	-	1	-	-	-	-
Allegan	620	57	178	154	150	21	19	14	10	2	3	7	1	1	3
Alpena	131	15	19	62	26	4	3	-	-	-	1	-	-	-	1
Antrim	55	12	8	22	3	1	1	1	-	1	1	-	1	-	4
Arenac	169	8	145	3	8	1	-	-	-	1	-	-	-	-	3
Baraga	82	2	7	63	-	2	-	2	2	-	1	-	1	-	2
Barry	392	46	183	128	10	2	5	4	2	6	-	2	1	-	3
Bay	1,284	142	200	160	9	697	22	13	8	8	4	8	-	-	13
Benzie	42	2	23	4	4	1	2	3	2	-	-	-	-	-	1
Berrien	1,976	1,352	19	117	310	17	47	17	32	16	21	10	1	-	17
Branch	344	55	110	125	18	6	3	4	9	8	1	4	-	-	1
Calhoun	915	439	42	263	70	24	17	24	8	7	11	-	-	1	9
Cass	490	57	29	340	14	9	12	6	10	-	2	-	-	-	11
Charlevoix	21	12	-	3	1	-	-	1	1	-	3	-	-	-	-
Cheboygan	182	12	16	67	68	9	1	4	2	-	2	-	1	-	-
Chippewa	207	41	8	136	5	10	-	2	1	1	2	-	1	-	-
Clare	31	9	1	5	13	-	-	-	2	2	-	-	-	-	-
Clinton	376	54	23	235	36	11	12	2	-	-	1	-	-	-	2
Crawford	123	10	32	11	65	2	-	2	-	-	-	-	-	-	1
Delta	260	37	59	109	43	1	1	8	2	-	-	-	-	-	-
Dickinson	135	45	26	54	1	2	-	2	2	-	-	-	1	-	2
Eaton	1,355	104	502	393	282	28	16	12	4	5	5	2	-	-	2
Emmet	44	35	-	-	4	-	-	1	1	-	2	-	-	-	1
Genesee	5,882	3,231	585	982	587	32	79	60	47	160	42	21	3	2	51
Gladwin	12	4	-	1	2	-	1	-	-	3	1	-	-	-	-
Gogebic	80	9	13	49	-	2	-	-	1	2	4	-	-	-	-
Grand Traverse	327	23	84	174	14	8	10	3	3	2	1	-	-	-	5
Gratiot	153	43	17	41	29	12	4	5	-	1	-	-	-	-	1
Hillsdale	227	56	31	81	37	2	11	1	1	-	2	-	-	-	5
Houghton	159	18	14	77	20	18	1	1	-	1	3	-	-	-	6
Huron	66	3	1	30	17	4	6	-	1	-	1	-	2	-	1
Ingham	10,130	2,205	5,543	1,126	840	131	125	32	40	41	25	10	2	2	8
Ionia	414	61	107	136	77	9	5	3	3	10	1	-	-	-	2
Iosco	267	11	79	154	19	1	1	2	-	-	-	-	-	-	-
Iron	194	7	103	41	31	6	-	2	-	1	2	-	-	-	1
Isabella	146	61	2	6	7	50	6	-	2	8	1	-	1	-	2
Jackson	1,268	500	156	220	183	120	20	29	12	7	13	-	1	-	7
Kalamazoo	2,291	1,266	330	317	172	29	23	13	18	29	11	25	-	1	57
Kalkaska	144	14	5	69	43	4	-	8	1	-	-	-	-	-	-
Kent	18,780	2,142	14,782	1,275	205	69	77	43	47	62	25	13	6	12	22
Keweenaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lake	41	27	-	10	-	-	-	-	-	-	4	-	-	-	-
Lapeer	432	26	17	238	101	19	7	15	-	2	2	-	-	-	5
Leelanau	50	3	7	30	2	1	-	1	3	-	1	-	-	-	2
Lenawee	1,216	131	104	266	498	42	17	114	4	19	9	10	1	-	1
Livingston	965	50	204	254	377	35	11	18	6	3	-	-	2	1	4
Luce	41	3	4	18	1	8	5	-	-	-	1	-	-	-	1
Mackinac	33	15	-	15	-	2	-	-	-	-	1	-	-	-	-
Macomb	2,834	410	356	1,084	126	183	175	272	44	64	36	3	6	4	73
Manistee	225	13	10	50	145	1	2	1	-	-	2	-	-	-	1
Marquette	1,126	153	846	39	16	31	16	6	2	4	5	-	-	-	8
Mason	218	56	35	111	2	2	5	2	-	2	1	2	-	-	-
Mecosta	506	41	342	80	8	23	1	1	2	3	2	-	-	1	2
Menominee	187	10	8	16	141	6	2	1	-	-	1	-	1	-	1
Midland	677	87	69	256	8	238	4	9	1	2	2	-	-	-	1
Missaukee	81	3	5	60	8	-	1	4	-	-	-	-	-	-	-
Monroe	1,250	207	139	367	337	9	28	138	8	2	2	1	3	2	7
Montcalm	399	34	34	117	188	12	3	6	-	4	-	-	-	-	1
Montmorency	14	1	2	3	7	1	-	-	-	-	-	-	-	-	-
Muskegon	1,315	658	71	416	46	12	40	9	15	15	5	9	1	-	18
Newaygo	515	48	38	395	1	7	12	7	1	1	4	-	1	-	-
Oakland	8,430	1,869	1,281	3,232	223	834	314	104	100	114	81	23	8	2	245
Oceana	114	23	2	54	1	-	24	2	-	3	2	-	-	-	3
Ogemaw	66	4	8	1	36	1	11	1	1	2	-	-	-	-	1
Ontonagon	68	-	6	54	-	1	3	1	2	-	-	-	-	-	1
Osceola	13	11	1	-	-	-	-	-	-	-	-	-	-	-	1
Oscoda	18	3	10	-	1	-	1	1	1	1	-	-	-	-	-
Otsego	38	11	15	2	2	3	2	3	-	-	-	-	-	-	-
Ottawa	1,579	271	173	1,017	38	5	30	9	6	9	10	-	3	-	8
Presque Isle	33	3	3	7	11	1	2	2	-	4	-	-	-	-	-
Roscommon	112	5	-	2	101	-	1	1	-	-	2	-	-	-	-
Saginaw	2,228	1,342	280	326	119	15	32	13	31	32	23	7	3	-	5
St. Clair	896	359	124	218	99	4	21	24	15	21	4	-	2	-	5
St. Joseph	357	47	37	192	35	16	12	7	6	2	2	-	1	-	-
Sanilac	17	13	-	-	-	-	-	-	1	-	2	-	-	-	1
Schoolcraft	125	6	84	25	4	4	-	2	-	-	-	-	-	-	-
Shiawassee	433	82	72	136	84	13	11	6	2	6	-	-	-	-	1
Tuscola	296	48	12	68	117	2	4	4	2	33	3	-	-	-	3
Van Buren	794	155	112	385	19	7	60	6	11	6	12	6	1	-	14
Washtenaw	1,603	1,168	71	79	143	5	51	8	29	13	23	6	1	2	4
Wayne	27,079	17,025	1,655	3,057	1,465	474	719	501	692	403	696	86	30	16	260
Wexford	266	15	34	135	66	8	1	3	1	-	2	-	-	-	1
State Homes	32	-	3	2	2	-	16	-	-	-	-	8	-	-	1

1 - 765 of these were serum hepatitis.

2 - Effective January, 1975, a new diagnostic classification system for tuberculosis was adopted. As a result, direct comparison of case counts and rates between 1975 and preceding years will not be possible.

3 - Includes:

Meningitis, Aseptic	377	Encephalitis Infections	67	Dysentary, Amebic	9	Undulant Fever	2	Psittacosis	1
Meningitis, Influenzal	154	Ring Worm	48	Congenital Rubella	3	Cholera	1	Tetanus	1
Meningitis, excluding Aseptic	130	Malaria	21	Diarrhea Epidemic	3	Food Poisoning	1	Trichinosis	1
Staphylococcal Infections	89	Typhoid Fever	15	Leptospirosis (Weils disease)	2	Polio	1		

TABLE 4.13

NUMBER OF DEATHS BY CAUSE
MICHIGAN RESIDENTS, 1976

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER
	I. INFECTIVE AND PARASITIC DISEASES (000-136)	
002	Paratyphoid fever	1
008	Enteritis due to other specified organism	5
009	Diarrheal disease	59
010	Silicotuberculosis	5
011	Pulmonary tuberculosis	53
012	Other respiratory tuberculosis	2
013	Tuberculosis of meninges and central nervous system	3
015	Tuberculosis of bones and joints	1
016	Tuberculosis of genitourinary system	1
017	Tuberculosis of other organs	2
018	Disseminated tuberculosis	7
019	Late effects of tuberculosis	6
027	Other zoonotic bacterial diseases	2
031	Other diseases due to mycobacteria	3
033	Whooping cough	1
036	Meningococcal infection	16
037	Tetanus	2
038	Septicemia	298
039	Other bacterial diseases	58
044	Late effects of acute poliomyelitis	2
045	Aseptic meningitis due to enterovirus	3
046	Other enterovirus diseases of central nervous system	3
052	Chicken pox	2
053	Herpes zoster	3
054	Herpes simplex	6
055	Measles	1
065	Viral encephalitis, unspecified	6
066	Late effects of viral encephalitis	1
070	Infectious hepatitis	13
073	Psittacosis	1
079	Other viral diseases	10
090	Congenital syphilis	1
093	Cardiovascular syphilis	3
094	Syphilis of central nervous system	1
100	Leptospirosis	1
112	Moniliasis	10
115	Histoplasmosis	1
116	Blastomycosis	5
117	Other systemic mycosis	10
124	Trichiniasis	1
127	Other intestinal helminthiasis	1
130	Toxoplasmosis	1
135	Sarcoidosis	12
136	Other and unspecified infective and parasitic diseases	6
	II. NEOPLASMS (140-239)	
140	Malignant neoplasm of lip	4
141	Malignant neoplasm of tongue	68
142	Malignant neoplasm of salivary gland	24
143	Malignant neoplasm of gum	2
144	Malignant neoplasm of floor of mouth	9
145	Malignant neoplasm of other and unspecified parts of mouth	46
146	Malignant neoplasm of oropharynx	47
147	Malignant neoplasm of nasopharynx	17
148	Malignant neoplasm of hypopharynx	25
149	Malignant neoplasm of pharynx, unspecified	39
150	Malignant neoplasm of esophagus	313
151	Malignant neoplasm of stomach	568
152	Malignant neoplasm of small intestine including duodenum	23
153	Malignant neoplasm of large intestine, except rectum	1,626
154	Malignant neoplasm of rectum and rectosigmoid juction	338
155	Malignant neoplasm of liver and intrahepatic bile ducts, specified as primary	86
156	Malignant neoplasm of gallbladder and bile ducts	161
157	Malignant neoplasm of pancreas	736
158	Malignant neoplasm of peritoneum and retroperitoneal tissue	34
159	Malignant neoplasm of unspecified digestive organs	13
160	Malignant neoplasm of nose, nasal cavaties, middle ear, and accessory sinuses	23
161	Malignant neoplasm of larynx	142
162	Malignant neoplasm of trachea, bronchus, and lung	3,694
163	Malignant neoplasm of other and unspecified respiratory organs	27
170	Malignant neoplasm of bone	52
171	Malignant neoplasm of connective and other soft tissue	64
172	Malignant melanoma of skin	181
173	Other malignant neoplasm of skin	47
174	Malignant neoplasm of breast	1,370
180	Malignant neoplasm of cervix uteri	202
182	Other malignant neoplasm of uterus	199
183	Malignant neoplasm of ovary, fallopian tube, and broad ligament	408
184	Malignant neoplasm of other and unspecified female genital organs	40
185	Malignant neoplasm of prostate	855
186	Malignant neoplasm of testis	21
187	Malignant neoplasm of other and unspecified male genital organs	10
188	Malignant neoplasm of bladder	400
189	Malignant neoplasm of other and unspecified urinary organs	282
190	Malignant neoplasm of eye	10
191	Malignant neoplasm of brain	308
192	Malignant neoplasm of other parts of nervous system	73
193	Malignant neoplasm of thyroid gland	37
194	Malignant neoplasm of other endocrine glands	14
195	Malignant neoplasm of ill-defined sites	98
196	Secondary and unspecified malignant neoplasm of lymph nodes	5
197	Secondary malignant neoplasm of respiratory and digestive systems	265
198	Other secondary malignant neoplasm	86
199	Malignant neoplasm without specification of site	663
200	Lymphosarcoma and reticulum-cell sarcoma	174
201	Hodgkin's disease	94
202	Other neoplasm of lymphoid tissue	288
203	Multiple myeloma	238
204	Lymphatic leukemia	180
205	Myeloid leukemia	302
206	Monocytic leukemia	20
207	Other and unspecified leukemia	153
208	Polycythemia vera	16
209	Myelofibrosis	49
211	Benign neoplasm of other parts of digestive system	7
212	Benign neoplasm of respiratory system	9
215	Other benign neoplasm of muscular and connective tissue	3
218	Uterine fibroma	2
220	Benign neoplasm of ovary	4
223	Benign neoplasm of kidney and other urinary organs	2
225	Benign neoplasm of brain and other parts of nervous system	37
226	Benign neoplasm of endocrine glands	8
227	Hemangioma and lymphangioma	3
228	Benign neoplasm of other and unspecified organs and tissues	5
230	Neoplasm of unspecified nature of digestive organs	4
231	Neoplasm of unspecified nature of respiratory organs	10
235	Neoplasm of unspecified nature of ovary	2
237	Neoplasm of unspecified nature of other genitourinary organs	2
238	Neoplasm of unspecified nature of eye, brain, and other parts of nervous system	28
239	Neoplasm of unspecified nature of other and unspecified organs	8
	III. ENDOCRINE, NUTRITIONAL, AND METABOLIC DISEASES (240-279)	
242	Thyrotoxicosis with or without goiter	5
244	Myxedema	17
250	Diabetes mellitus	1,551
251	Disorders of pancreatic internal secretion other than diabetes mellitus	6
252	Diseases of parathyroid gland	2
253	Diseases of pituitary gland	9
255	Diseases of adrenal glands	14
256	Ovarian dysfunction	1
258	Polyglandular dysfunction and other diseases of endocrine glands	17
263	Other vitamin B deficiency	2
266	Other vitamin deficiency states	1
267	Protein malnutrition	4
268	Nutritional marasmus	30
269	Other nutritional deficiency	77
270	Congenital disorders of amino-acid metabolism	3
271	Congenital disorders of carbohydrate metabolism	2
272	Congenital disorders of lipid metabolism	7
273	Other and unspecified congenital disorders of metabolism	25
274	Gout	3
275	Plasma protein abnormalities	25

TABLE 4.15

NUMBER OF DEATHS BY CAUSE
MICHIGAN RESIDENTS, 1978 (continued)

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER
276	Amyloidosis	16
277	Obesity not specified as of endocrine origin	42
279	Other and unspecified metabolic diseases	38
IV.	DISEASES OF THE BLOOD AND BLOOD FORMING ORGANS (280-289)	
280	Iron deficiency anemias	3
281	Other deficiency anemias	8
282	Hereditary hemolytic anemias	17
283	Acquired hemolytic anemias	9
284	Aplastic anemia	50
285	Other and unspecified anemias	60
286	Coagulation defects	48
287	Purpura and other hemorrhagic conditions	23
288	Agranulocytosis	8
289	Other diseases of blood and blood-forming organs	12
V.	MENTAL DISORDERS (290-315)	
290	Senile and presenile dementia	38
291	Alcoholic psychosis	10
294	Psychosis associated with other physical conditions	1
295	Schizophrenia	5
296	Affective psychosis	1
298	Other psychosis	1
299	Unspecified psychosis	5
300	Neurosis	1
303	Alcoholism	144
304	Drug dependence	65
305	Physical disorder presume psychogenic	2
306	Special symptoms not elsewhere classified	5
309	Mental disorders not specified as psychotic associated with physical conditions	45
313	Severe mental retardation	3
315	Unspecified mental retardation	10
VI.	DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS (320-389)	
320	Meningitis	60
322	Intracranial and intraspinal abscess	4
323	Encephalitis, myelitis, and encephalmyelitis	9
324	Late effects of intracranial abscess or pyogenic infection	1
330	Hereditary neuromuscular disorders	50
331	Hereditary diseases of the striatopallidal system	21
332	Hereditary ataxia	3
333	Other hereditary and familial diseases of nervous system	6
340	Multiple sclerosis	71
341	Other demyelinating diseases of central nervous system	3
342	Paralysis agitans	130
343	Cerebral spastic infantile paralysis	34
344	Other cerebral paralysis	45
345	Epilepsy	77
347	Other diseases of brain	111
348	Motor neurone disease	115
349	Other diseases of spinal cord	7
351	Trigeminal neuralgia	1
354	Polyneuritis and polyradiculitis	10
356	Other diseases of cranial nerves	1
357	Other diseases of peripheral nerves except autonomic	1
374	Cataract	1
380	Otitis externa	1
381	Otitis media without mention of mastoiditis	1
383	Mastoiditis without mention of otitis media	2
VII.	DISEASES OF THE CIRCULATORY SYSTEM (390-458)	
390	Rheumatic fever no heart involvement	1
391	Rheumatic fever with heart involvement	12
393	Diseases of pericardium	1
394	Diseases of mitral valve	133
395	Diseases of aortic valve	170
396	Diseases of mitral and aortic valves	33
397	Diseases of other endocardial structures	19
398	Other heart disease, specified as rheumatic	117
400	Malignant hypertension	27
401	Essential benign hypertension	41
402	Hypertensive heart disease	272
403	Hypertensive renal disease	140
404	Hypertensive heart and renal disease	98
410	Acute myocardial infarction	13,347
411	Other acute and subacute forms of ischemic heart disease	75
412	Chronic ischemic heart disease	12,838
413	Angina pectoris	10
420	Acute pericarditis, nonrheumatic	3
421	Acute and subacute endocarditis	26
422	Acute myocarditis	12
423	Chronic disease of pericardium, nonrheumatic	15
424	Chronic disease of endocardium	48
425	Cardiomyopathy	210
426	Pulmonary heart disease	60
427	Symptomatic heart disease	1,755
428	Other myocardial insufficiency	59
429	Ill-defined heart disease	72
430	Subarachnoid hemorrhage	291
431	Cerebral hemorrhage	864
432	Occlusion of precerebral arteries	85
433	Cerebral thrombosis	1,709
434	Cerebral embolism	39
435	Transient cerebral ischemia	2
436	Acute but ill-defined cerebrovascular disease	2,404
437	Generalized ischemic cerebrovascular disease	1,009
438	Other and ill-defined cerebrovascular disease	127
440	Arteriosclerosis	1,146
441	Aortic aneurysm (nonsyphilitic)	593
442	Other aneurysm	43
443	Other peripheral vascular disease	44
444	Arterial embolism and thrombosis	185
445	Gangrene	118
446	Polyarteritis nodosa and allied conditions	25
447	Other diseases of arteries and arterioles	29
448	Diseases of capillaries	1
450	Pulmonary embolism and infarction	446
451	Phlebitis and thrombophlebitis	57
452	Portal vein thrombosis	2
453	Other venous embolism and thrombosis	17
454	Varicose veins of lower extremities	5
455	Hemorrhoids	1
456	Varicose veins of other sites	22
458	Other diseases of circulatory system	14
VIII.	DISEASES OF THE RESPIRATORY SYSTEM (460-519)	
461	Acute sinusitis	1
464	Acute laryngitis and tracheitis	1
465	Acute upper respiratory infection of multiple or unspecified sites	4
466	Acute bronchitis and bronchiolitis	16
470	Influenza, unqualified	82
471	Influenza with pneumonia	79
472	Influenza with other respiratory manifestations	8
473	Influenza with digestive manifestations	3
474	Influenza with nervous manifestations	3
480	Viral pneumonia	49
481	Pneumococcal pneumonia	123
482	Other bacterial pneumonia	54
483	Pneumonia due to other specified organism	6
484	Acute interstitial pneumonia	23
485	Bronchopneumonia, unspecified	336
486	Pneumonia, unspecified	1,217
490	Bronchitis, unqualified	36
491	Chronic bronchitis	154
492	Emphysema	667
493	Asthma	64
500	Hypertrophy of tonsils and adenoids	2
503	Chronic sinusitis	1
508	Other diseases of upper respiratory tract	19
510	Empyema	21
511	Pleurisy	35
512	Spontaneous pneumothorax	13
513	Abscess of lung	37
514	Pulmonary congestion and hypostasis	32
515	Pneumoconiosis due to silica and silicates	16
517	Other chronic interstitial pneumonia	127

TABLE 4.15

NUMBER OF DEATHS BY CAUSE
MICHIGAN RESIDENTS, 1978 (continued)

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER
518	Bronchiectasis	21
519	Other diseases of respiratory system	1,177
	IX. DISEASES OF THE DIGESTIVE SYSTEM (520-577)	
526	Diseases of the jaw	1
529	Diseases of the tongue and other oral conditions	1
530	Diseases of the esophagus	45
531	Ulcer of the stomach	90
532	Ulcer of duodenum	85
533	Peptic ulcer, site unspecified	41
534	Gastrojejunal ulcer	26
535	Gastritis and duodenitis	33
536	Disorders of function of stomach	3
537	Other diseases of stomach and duodenum	19
540	Acute appendicitis	32
550	Inguinal hernia without mention of obstruction	2
551	Other hernia of abdominal cavity without mention of obstruction	28
552	Inguinal hernia with obstruction	6
553	Other hernia of abdominal cavity with obstruction	23
560	Intestinal obstruction without mention of hernia	167
561	Gastroenteritis and colitis, except ulcerative, of noninfectious origin	2
562	Diverticula of intestine	122
563	Chronic enteritis and ulcerative colitis	30
564	Functional disorders of intestines	4
566	Abscess of anal and rectal regions	5
567	Peritonitis	47
568	Peritoneal adhesions	1
569	Other diseases of intestines and peritoneum	245
570	Acute and subacute necrosis of liver	19
571	Cirrhosis of liver	1,351
572	Suppurative hepatitis and liver abscess	7
573	Other diseases of liver	166
574	Cholelithiasis	47
575	Cholecystitis and cholangitis, without mention of calculus	48
576	Other diseases of gallbladder and biliary ducts	54
577	Diseases of pancreas	100
	X. DISEASES OF THE GENITOURINARY SYSTEM (580-629)	
580	Acute nephritis	90
581	Nephrotic syndrome	16
582	Chronic nephritis	254
583	Nephritis unqualified	10
584	Renal sclerosis, unqualified	1
590	Infections of kidney	86
591	Hydronephrosis	4
592	Calculus of kidney and ureter	9
593	Other diseases of kidney and ureter	273
594	Calculus of other parts of urinary system	2
595	Cystitis	8
596	Other diseases of bladder	13
598	Stricture of urethra	2
599	Other diseases of urinary tract	98
600	Hyperplasia of prostate	26
601	Prostatitis	1
602	Other diseases of prostate	9
604	Orchitis and epididymitis	1
607	Other diseases of male genital organs	5
611	Other diseases of breast	1
614	Salpingitis and oophoritis, unqualified	1
616	Diseases of parametrium and pelvic peritoneum (female)	4
623	Uterovaginal prolapse	2
625	Other diseases of uterus	2
629	Other diseases of female genital organs	4
	XI. COMPLICATIONS OF PREGNANCY, CHILDBIRTH, AND THE PUERPERIUM (630-678)	
631	Ectopic pregnancy	3
632	Hemorrhage of pregnancy	1
634	Other complications of pregnancy	2
636	Renal disease during pregnancy-puerperium	1
637	Pre-eclampsia, eclampsia, and toxemia, unspecified	3
651	Delivery complicated by placenta previa or antepartum hemorrhage	1
653	Delivery complicated by other postpartum hemorrhage	1
670	Sepsis childbirth and puerperium	1
673	Puerperal pulmonary embolism	1
675	Puerperal blood dyscrasia	1
	XII. DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE (680-709)	
682	Other cellulitis and abscess	13
683	Acute lymphadenitis	1
684	Impetigo	1
685	Pilonidal cyst	1
686	Other local infections of skin and subcutaneous tissue	7
692	Other eczema and dermatitis	2
694	Pemphigus	4
695	Erythematous conditions	8
707	Chronic ulcer of skin	49
709	Other diseases of skin	8
	XIII. DISEASES OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE (710-738)	
710	Acute arthritis due to pyogenic organisms	3
712	Rheumatoid arthritis and allied conditions	39
713	Osteoarthritis and allied conditions	11
714	Other specified forms of arthritis	1
715	Arthritis, unspecified	8
716	Polymyositis and dermatomyositis	4
717	Other nonarticular rheumatism	1
718	Rheumatism, unspecified	1
720	Osteomyelitis and periostitis	5
721	Osteitis deformans	4
723	Other diseases of bone	13
725	Displacement of intervertebral disc	1
728	Vertebrogenic pain syndrome	2
729	Other diseases of joint	8
730	Bunion	1
732	Infective myositis and other inflammatory diseases of tendon and fascia	3
733	Other diseases of muscle, tendon, and fascia	12
734	Diffuse diseases of connective tissue	62
735	Curvature of spine	5
738	Other deformities	2
	XIV. CONGENITAL ANOMALIES (740-759)	
740	Anencephalus	31
741	Spina bifida	4
742	Congenital hydrocephalus	33
743	Other congenital anomalies of nervous system	31
746	Congenital anomalies of heart	218
747	Other congenital anomalies of circulatory system	43
748	Congenital anomalies of respiratory system	18
749	Cleft palate and cleft lip	1
750	Other congenital anomalies of upper alimentary tract	4
751	Other congenital anomalies of digestive system	11
753	Congenital anomalies of urinary system	24
755	Other congenital anomalies of limbs	1
756	Other congenital anomalies of musculoskeletal system	9
757	Congenital anomalies of skin, hair, and nails	1
758	Other and unspecified congenital anomalies	3
759	Congenital syndromes affecting multiple systems	86
	XV. CERTAIN CAUSES OF PERINATAL MORBIDITY AND MORTALITY (760-779)	
761	Other maternal conditions unrelated to pregnancy	4
762	Toxemia of pregnancy	2
763	Maternal ante- and intrapartum infection	5
765	Difficult labor with disproportion, but no mention of abnormality of pelvis	1
766	Difficult labor with malposition of fetus	4
769	Other complications of pregnancy and childbirth	122
770	Conditions of placenta	44
771	Conditions of umbilical cord	8
772	Birth injury without mention of cause	58
775	Hemolytic disease of newborn without mention of kernicterus	7

TABLE 4.15

NUMBER OF DEATHS BY CAUSE
MICHIGAN RESIDENTS, 1978 (continued)

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER
776	Anoxic and hypoxic conditions not elsewhere classifiable	412
777	Immaturity, unqualified	152
778	Other conditions of fetus or newborn	121
XVI.	SYMPTOMS AND ILL-DEFINED CONDITIONS (780-796)	
780	Certain symptoms referable to nervous system and special senses	15
781	Other symptoms referable to nervous system and special senses	3
782	Symptoms referable to cardiovascular and lymphatic system	48
783	Symptoms referable to respiratory system	4
784	Symptoms referable to upper gastrointestinal tract	1
785	Symptoms referable to abdomen and lower gastrointestinal tract	1
788	Other general symptoms	13
790	Nervousness and debility	1
792	Uremia	8
794	Senility without mention of psychosis	17
795	Sudden death (cause unknown)	260
796	Other ill-defined and unknown causes of morbidity and mortality	163
E XVII.	ACCIDENTS, POISONINGS, AND VIOLENCE (EXTERNAL CAUSE) (E800-E999)	
E804	Fall in, on, or from train	2
E805	Hit by rolling stock	11
E810	Motor vehicle traffic accident involving collision with train	34
E812	Motor vehicle traffic accident involving collision with another motor vehicle	932
E813	Motor vehicle traffic accident involving collision with other vehicle	45
E814	Motor vehicle traffic accident involving collision with pedestrian	361
E815	Other motor vehicle traffic accident involving collision	201
E816	Noncollision motor vehicle traffic accident due to loss of control	315
E818	Other noncollision motor vehicle traffic accident	36
E819	Motor vehicle traffic accident of unspecified nature	174
E820	Motor vehicle nontraffic accident involving collision with moving object	26
E821	Motor vehicle nontraffic accident involving collision with stationary object	2
E823	Motor vehicle nontraffic accident of other and unspecified nature	12
E827	Othe nonmotor road vehicle accident	2
E830	Accident to watercraft causing submersion	21
E831	Accident to watercraft causing other injury	1
E832	Other accidental submersion or drowning in water transport	28
E835	Other and unspecified fall in water transport	1
E837	Explosion, fire burning and in water transport	1
E838	Other and unspecified water transport accident	6
E840	Accident to powered aircraft on take-off or landing	1
E841	Accident to powered aircraft, other and unspecified	25
E850	Accidental poisoning by antibiotics and other antine	1
E852	Accidental poisoning by primarily systematic and hematologic agents	1
E853	Accidental poisoning by analgesics and antipyretics	7
E854	Accidental posioning by other sedatives and hynotics	2
E855	Accidental poisoning by autonomic nervous system and psychotherapeutic drugs	6
E856	Accidental poisoning by other central nervous system depressants and stimulants	1
E857	Accidental poisoning by cardiovascular drugs	6
E859	Accidental poisoning by other and unspecified drugs and medicaments	32
E860	Accidental poisoning by alcohol	3
E867	Accidental poisoning by corrosives and caustics, not elsewhere classified	1
E869	Accidental poisoning by other and unspecified solid and liquid substances	16
E873	Accidental poisoning by motor vehicle exhaust gas	52
E874	Accidental poisoning by carbon monoxide from incomplete combustion of domestic fuels	6
E875	Accidental poisoning by other carbon monoxide	22
E876	Accidental poisoning by other gases and vapors	8
E880	Fall on or from stairs or steps	61
E881	Fall on or from ladders or scaffolding	11
E882	Fall from or out of building or other structure	17
E883	Fall into hole or other opening in surface	6
E884	Other fall from one level to another	35
E885	Fall on same level from slipping, stumbling, or tripping	14
E887	Other and unspecified fall	393
E890	Accident caused by conflagration in private dwelling	185
E891	Accident caused by conflagration in other building or structure	2
E892	Accident caused by conflagration not in building or structure	1
E893	Accident caused by ignition of clothing	10
E894	Accident caused by ignition of highly inflammable material	3
E895	Accident caused by controlled fire in private dwelling	1
E896	Accident caused by controlled fire in other building or structure	1
E898	Accident caused by other specified fires or flames	14
E899	Accident caused by unspecified fire	15
E900	Excessive heat	5
E901	Excessive cold	20
E904	Hunger, thirst, exposure, and neglect	17
E906	Other accidents caused by animals	3
E907	Lightning	1
E908	Cataclysm	4
E910	Accidental drowning and submersion	205
E911	Inhalation and ingestion of food causing obstruction or suffocation	78
E912	Inhalation and ingestion of other object causing obstruction or suffocation	63
E913	Accidental mechanical suffocation	38
E914	Foreign body accidentally entering eye and adnexa	1
E915	Foreign body accidentally entering other orifice	4
E916	Struck accidentally by falling object	34
E917	Striking against or struck accidentally by objects	29
E918	Caught accidentally in or between objects	17
E919	Overexertion and strenuous movements	3
E920	Accidents caused by cutting or piercing instruments	5
E921	Accidents caused by explosion of pressure vessel	1
E922	Accident caused by firearm missiles	37
E923	Accident caused by explosive material	11
E924	Accident caused by hot substance, corrosive liquid, and steam	11
E925	Accident caused by electric current	30
E927	Vehicle accidents not elsewhere classifiable	18
E928	Machinery accidents not elsewhere classifiable	19
E929	Other and unspecified accidents	82
E930	Complications and misadventures in operative therapeutic procedures	12
E931	Complications and misadventures in other and unspecified therapeutic procedures	17

TABLE 4.15

NUMBER OF DEATHS BY CAUSE
MICHIGAN RESIDENTS, 1978 (continued)

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER
E932	Complications and misadventures in diagnostic procedures----------	9
E940	Late effect of motor vehicle accident-------	11
E943	Late effect of accidental fall--------------	9
E944	Late effect of other accident---------------	6
E947	Late effect of sugical operation------------	1
E948	Late effect of irradiation------------------	3
E949	ate effect of other surgical and medical procedures-----------	2
E950	Suicide and self-inflicted poisoning by solid or liquid substances--------	131
E952	Suicide and self-inflicted poisoning by other gases--------	172
E953	Suicide and self-inflicted injury by hanging, strangulation, and suffocation-----	154
E954	Suicide and self-inflicted injury by submersion (drowning)--------	16
E955	Suicide and self-inflicted injury by firearms and explosives--------	398
E956	Suicide and self-inflicted injury by cutting and piercing instrumunts---------	18
E957	Suicide and self-inflicted injury by jumping from high place--------	22
E958	Suicide and self-inflicted injury by other and unspecified means--------	24
E960	Fight, brawl, or rape----------------------	2

ICDA LIST NUMBER	CAUSE OF DEATH	NUMBER
E962	Assault by poisoning------------------------	5
E963	Assault by hanging and strangulation--------	32
E965	Assault by firearms and explosives----------	640
E966	Assault by cutting and piercing instruments-------------	137
E968	Assault by other and unspecified means------	98
E969	Late effect of injury purposely inflicted by other person-------------	1
E970	Injury due to legal intervention by firearms---------	13
E976	Injury due to legal intervention by unspecified means------------	1
E980	Poisoning by solid or liquid substances, undetermined whether accidentally or purposely inflicted-----	39
E982	Poisoning by other gases, undetermined whether accidentally or purposely inflicted---------	10
E983	Hanging and strangulation, undetermined whether accidentally or purposely inflicted---------	3
E984	Submersion (drowning), undetermined whether accidentally or purposely inflicted---------	13
E985	Injury by firearms and explosives, undetermined whether accidentally or purposely inflicted---------	28
E987	Falling from high place, undetermined whether accidentally or purposely inflicted---------	1
E988	Injury by other and unspecified means, undetermined whether accidentally or purposely inflicted------	22

TABLE 4.16
POPULATION BY AGE, RACE, AND SEX, MICHIGAN, 1978[1]

AGE	ALL RACES			WHITE			OTHER THAN WHITE		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Under 1 Year	134946	69057	65888	109974	56599	53374	24972	12458	1251
1-4 Years	555911	283935	271976	461843	236589	225254	94068	47346	4672
5-9 Years	857937	437717	420220	734674	375955	358720	123262	61762	6150
0-14 Years	938810	477479	461331	795321	405255	390066	143489	72224	7126
5-19 Years	942459	470913	471547	794809	398349	396460	147651	72564	7508
20-24 Years	771201	376147	395053	649744	316792	332953	121457	59356	6210
25-29 Years	574408	243737	330671	498270	212338	285932	76138	31400	4473
30-34 Years	686411	345066	341345	600998	305948	295049	85413	39118	4629
35-39 Years	567605	306947	260658	492882	270347	222535	74723	36600	3812
40-44 Years	398544	211434	187110	347477	186058	161419	51068	25376	2569
45-49 Years	447264	230877	216386	393264	203232	190031	54000	27645	2635
50-54 Years	528211	260358	267852	467229	230432	236798	60981	29927	3105
55-59 Years	486392	233504	252888	433082	207778	225303	53311	25725	2758
60-64 Years	397750	190591	207160	353802	169580	184222	43948	21011	2293
65-69 Years	295264	137825	157439	259556	120479	139077	35708	17346	1836
70-74 Years	210864	91858	119006	188658	81342	107316	22206	10516	1169
75-79 Years	166845	66831	100014	153744	61223	92522	13101	5608	749
80-84 Years	140074	55509	84565	129510	51032	78478	10564	4477	608
85 and Over	88103	32334	55769	80088	29053	51035	8016	3281	473
TOTAL	9189000	4522120	4666880	7944924	3918381	4026543	1244076	603739	64033

[1] Sum of subpopulations may not equal totals due to rounding.
Estimates by age and sex were developed from the total state population provisional estimate for July 1, 1978 as contained in U.S. Bureau of the Census, Current Population Reports, Series P-26, No. 78-22, and from projected population subgroup proportions as developed by the Michigan Department of Management and Budget. Bureau of Budget.
Estimates by race were developed by the Office of Vital and Health Statistics. See technical notes.

TABLE 4.17

POPULATION CHANGES BY COUNTY
MICHIGAN RESIDENTS, 1978

Area	Population Estimates July 1, 1968	Population Estimates July 1, 1978	Percent Change	Natural Increase	Net Migration
STATE	8,675,000	9,189,000	5.9	712,231	-196,200
Alcona	5,700	9,300	63.2	-113	3,700
Alger	8,000	10,000	25.0	264	1,700
Allegan	59,900	74,000	23.5	6,187	7,900
Alpena	29,900	33,400	11.7	2,191	1,300
Antrim	10,700	16,300	52.3	505	5,100
Arenac	10,600	13,500	27.4	606	2,300
Baraga	8,000	8,600	7.5	307	300
Barry	30,400	42,900	41.1	2,711	9,800
Bay	114,400	121,600	6.3	9,922	-2,700
Benzie	8,200	10,600	29.3	145	2,300
Berrien	164,600	167,300	1.6	14,723	-12,000
Branch	34,500	38,900	12.8	2,173	2,200
Calhoun	141,900	140,700	-0.9	10,361	-11,600
Cass	36,700	45,400	23.7	3,166	5,300
Charlevoix	17,000	19,400	14.1	889	1,500
Cheboygan	14,800	19,800	33.8	1,109	3,900
Chippewa	32,600	30,500	-6.4	3,823	-5,900
Clare	13,600	23,800	75.0	547	9,700
Clinton	43,800	55,000	25.6	5,113	6,100
Crawford	5,900	9,100	54.2	360	2,800
Delta	35,100	40,300	14.8	1,857	3,300
Dickinson	24,000	26,100	8.8	116	2,000
Eaton	61,300	82,100	33.9	6,217	14,600
Emmet	17,700	21,500	21.5	1,082	2,700
Genesee	446,400	451,000	1.0	48,420	-43,800
Gladwin	10,900	18,300	67.9	637	6,800
Gogebic	20,400	19,600	-3.9	-535	-300
Grand Traverse	41,700	48,400	16.1	3,251	3,400
Gratiot	39,400	39,300	-0.3	3,371	-3,500
Hillsdale	35,200	41,200	17.0	2,485	3,500
Houghton	33,100	37,300	12.7	280	3,900
Huron	32,600	35,800	9.8	1,611	1,600
Ingham	257,600	271,000	5.2	29,188	-15,800
Ionia	45,800	49,700	8.5	4,247	-300
Iosco	20,400	30,500	49.5	2,961	7,100
Iron	13,800	14,700	6.5	-709	1,600
Isabella	35,900	52,100	45.1	4,246	12,000
Jackson	141,400	150,200	6.2	10,293	-1,500
Kalamazoo	188,900	208,000	10.1	17,024	2,100
Kalkaska	5,200	11,400	119.2	453	5,700
Kent	409,000	435,800	6.6	35,559	-8,800
Keweenaw	2,100	2,200	4.8	-102	200
Lake	4,400	7,000	59.1	-175	2,800
Lapeer	50,000	67,100	34.2	5,765	11,300
Leelanau	9,200	13,400	45.7	337	3,900
Lenawee	81,400	87,300	7.2	7,483	-1,600
Livingston	48,300	92,300	91.1	5,952	38,000
Luce	7,400	7,300	-1.4	250	-400
Mackinac	9,700	11,200	15.5	319	1,200
Macomb	615,100	693,400	12.7	62,126	16,200
Manistee	19,400	22,500	16.0	324	2,800
Marquette	61,100	73,800	20.8	6,878	5,800
Mason	21,900	24,700	12.8	699	2,100
Mecosta	24,700	34,800	40.9	2,257	7,800
Menominee	23,000	26,500	15.2	324	3,000
Midland	60,300	69,700	15.6	7,676	1,700
Missaukee	6,200	9,700	56.5	437	3,100
Monroe	112,500	131,800	17.2	11,394	7,900
Montcalm	41,800	45,400	8.6	3,128	500
Montmorency	4,200	7,700	83.3	61	3,400
Muskegon	155,200	158,800	2.3	12,553	-9,000
Newaygo	25,500	33,400	31.0	1,804	6,100
Oakland	853,300	1,009,400	18.3	77,311	78,800
Oceana	15,800	21,000	32.9	1,356	3,800
Ogemaw	9,600	16,800	75.0	182	7,000
Ontonagon	10,600	10,700	0.9	438	-300
Osceola	15,900	18,200	14.5	961	1,300
Oscoda	4,000	6,700	67.5	-72	2,800
Otsego	10,700	14,300	33.6	1,122	2,500
Ottawa	115,300	149,400	29.6	13,631	20,500
Presque Isle	12,500	14,100	12.8	644	1,000
Roscommon	8,300	16,200	95.2	-239	8,100
Saginaw	218,800	227,700	4.1	22,533	-13,600
St. Clair	116,100	133,500	15.0	8,682	8,700
St. Joseph	45,600	51,800	13.6	3,778	2,400
Sanilac	33,500	40,200	20.0	2,000	4,700
Schoolcraft	7,600	9,300	22.4	171	1,500
Shiawassee	61,000	70,300	15.2	6,530	2,800
Tuscola	49,700	55,100	10.9	6,243	1,200
Van Buren	55,400	62,300	12.5	4,277	2,600
Washtenaw	212,000	254,500	20.0	25,660	16,800
Wayne	2,709,400	2,390,600	-11.8	171,071	-489,900
Wexford	19,500	22,800	16.9	1,275	2,000
Not Stated	-	-	-	-36	100

TABLE 4.18 -- Abridged Life Table, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	e̊x(6)[1]
0-1	0.01431	100000.	1431.	98741.	7292910.	72.9
1-5	0.00248	98569.	244.	393689.	7194169.	73.0
5-10	0.00147	98325.	144.	491232.	6800480.	69.2
10-15	0.00139	98182.	136.	490636.	6309248.	64.3
15-20	0.00484	98045.	474.	489166.	5818612.	59.3
20-25	0.00752	97571.	734.	486097.	5329446.	54.6
25-30	0.00859	96838.	831.	482092.	4843348.	50.0
30-35	0.00668	96007.	641.	478433.	4361256.	45.4
35-40	0.00873	95366.	832.	474943.	3882823.	40.7
40-45	0.01646	94535.	1556.	469073.	3407881.	36.0
45-50	0.02396	92979.	2227.	459636.	2938807.	31.6
50-55	0.03360	90752.	3049.	446593.	2479171.	27.3
55-60	0.05040	87703.	4420.	428267.	2032578.	23.2
60-65	0.08293	83283.	6906.	400243.	1604312.	19.3
65-70	0.12670	76376.	9677.	359940.	1204069.	15.8
70-75	0.19346	66700.	12904.	302016.	845129.	12.7
75-80	0.24913	53796.	13402.	235199.	543113.	10.1
80-85	0.28660	40394.	11577.	172473.	307914.	7.6
85+	1.00000	28817.	28817.	135441.	135441.	4.7

[1] Definitions of life table values are contained in the Technical Notes.

TABLE 4.19--Abridged Life Table for Males, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	e̊x(6)[1]
0-1	0.01633	100000.	1633.	98560.	6956484.	69.6
1-5	0.00279	98367.	274.	392816.	6857925.	69.7
5-10	0.00175	98093.	171.	489992.	6465109.	65.9
10-15	0.00187	97921.	182.	489257.	5975117.	61.0
15-20	0.00700	97739.	684.	487172.	5485860.	56.1
20-25	0.01115	97055.	1082.	482725.	4998687.	51.5
25-30	0.01485	95973.	1424.	476256.	4515962.	47.1
30-35	0.00895	94549.	845.	470532.	4039707.	42.7
35-40	0.01017	93703.	953.	466323.	3569175.	38.1
40-45	0.01885	92751.	1748.	459726.	3102852.	33.5
45-50	0.02857	91002.	2600.	448933.	2643126.	29.0
50-55	0.04256	88403.	3762.	433237.	2194193.	24.8
55-60	0.06639	84640.	5619.	410152.	1760957.	20.8
60-65	0.10826	79021.	8554.	374959.	1350805.	17.1
65-70	0.16413	70467.	11565.	324765.	975847.	13.8
70-75	0.25481	58902.	15009.	257494.	651081.	11.1
75-80	0.31901	43893.	14002.	183374.	393587.	9.0
80-85	0.32785	29891.	9800.	123821.	210213.	7.0
85+	1.00000	20091.	20091.	86392.	86392.	4.3

[1] IBID.

TABLE 4.20--Abridged Life Table for Females, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	e̊x(6)[1]
0-1	0.01213	100000.	1213.	98937.	7641182.	76.4
1-5	0.00215	98787.	212.	394629.	7542244.	76.3
5-10	0.00117	98576.	115.	492562.	7147616.	72.5
10-15	0.00090	98461.	89.	492113.	6655054.	67.6
15-20	0.00267	98372.	263.	491269.	6162941.	62.6
20-25	0.00406	98110.	398.	489579.	5671673.	57.8
25-30	0.00394	97712.	385.	487602.	5182094.	53.0
30-35	0.00438	97327.	425.	485632.	4694491.	48.2
35-40	0.00702	96902.	680.	482994.	4208859.	43.4
40-45	0.01376	96221.	1323.	478033.	3725864.	38.7
45-50	0.01901	94898.	1804.	470187.	3247832.	34.2
50-55	0.02482	93095.	2310.	459992.	2777645.	29.8
55-60	0.03542	90785.	3215.	446482.	2317652.	25.5
60-65	0.05904	87570.	5170.	425845.	1871170.	21.4
65-70	0.09271	82400.	7639.	394052.	1445325.	17.5
70-75	0.14302	74761.	10692.	348135.	1051273.	14.1
75-80	0.19867	64069.	12728.	289055.	703138.	11.0
80-85	0.25798	51341.	13244.	223602.	414083.	8.1
85+	1.00000	38096.	38096.	190481.	190481.	5.0

[1] IBID.

TABLE 4.21--Abridged Life Table for Whites, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	e̊x(6)[1]
0-1	0.01227	100000.	1227.	98922.	7354929.	73.6
1-5	0.00228	98773.	225.	394557.	7266007.	73.6
5-10	0.00140	98549.	137.	492366.	6871450.	69.7
10-15	0.00130	98411.	127.	491808.	6379085.	64.8
15-20	0.00483	98284.	474.	490349.	5887277.	59.9
20-25	0.00697	97809.	681.	487391.	5396928.	55.2
25-30	0.00720	97128.	699.	483862.	4909537.	50.5
30-35	0.00548	96429.	528.	480826.	4425675.	45.9
35-40	0.00733	95901.	702.	477919.	3944848.	41.1
40-45	0.01406	95199.	1338.	472922.	3466929.	36.4
45-50	0.02136	93861.	2005.	464599.	2994007.	31.9
50-55	0.03051	91856.	2802.	452736.	2529408.	27.5
55-60	0.04728	89054.	4210.	435580.	2076672.	23.3
60-65	0.08026	84844.	6809.	408386.	1641092.	19.3
65-70	0.12710	78035.	9918.	366697.	1232706.	15.8
70-75	0.19277	68117.	13131.	308490.	866009.	12.7
75-80	0.24416	54987.	13425.	241130.	557519.	10.1
80-85	0.28830	41561.	11982.	177365.	316388.	7.6
85+	1.00000	29579.	29579.	139024.	139024.	4.7

[1] IBID.

TABLE 4.22--Abridged Life Table for White Males, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	$\mathring{e}$x(6)[1]
0-1	0.01406	100000.	1406.	98751.	7029777.	70.3
1-5	0.00264	98594.	260.	393760.	6931026.	70.3
5-10	0.00168	98334.	165.	491217.	6537266.	66.5
10-15	0.00177	98169.	173.	490527.	6046049.	61.6
15-20	0.00721	97996.	706.	488393.	5555522.	56.7
20-25	0.01051	97290.	1022.	484002.	5067130.	52.1
25-30	0.01266	96268.	1218.	478223.	4583128.	47.6
30-35	0.00718	95050.	682.	473454.	4104905.	43.2
35-40	0.00844	94367.	796.	470008.	3631451.	38.5
40-45	0.01569	93571.	1468.	464507.	3161443.	33.8
45-50	0.02546	92103.	2344.	455072.	2696936.	29.3
50-55	0.03877	89758.	3479.	440735.	2241864.	25.0
55-60	0.06284	86279.	5421.	418905.	1801129.	20.9
60-65	0.10604	80858.	8574.	384230.	1382224.	17.1
65-70	0.16625	72284.	12017.	332823.	997994.	13.8
70-75	0.25722	60267.	15502.	263023.	665172.	11.0
75-80	0.31556	44766.	14126.	187401.	402149.	9.0
80-85	0.33164	30640.	10161.	126591.	214748.	7.0
85+	1.00000	20478.	20478.	88057.	88057.	4.3

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[1] IBID.

TABLE 4.23--Abridged Life Table for White Females, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	$\mathring{e}$x(6)[1]
0-1	0.01036	100000.	1036.	99104.	7706243.	77.1
1-5	0.00190	98964.	188.	395401.	7607139.	76.9
5-10	0.00111	98776.	109.	493582.	7211738.	73.0
10-15	0.00081	98667.	80.	493165.	6718157.	68.1
15-20	0.00244	98588.	240.	492396.	6224991.	63.1
20-25	0.00359	98348.	352.	490873.	5732595.	58.3
25-30	0.00313	97996.	306.	489215.	5241722.	53.5
30-35	0.00371	97689.	362.	487599.	4752507.	48.6
35-40	0.00597	97328.	580.	485357.	4264907.	43.8
40-45	0.01217	96747.	1177.	481011.	3779550.	39.1
45-50	0.01697	95570.	1621.	473992.	3298539.	34.5
50-55	0.02242	93949.	2106.	464768.	2824548.	30.1
55-60	0.03273	91843.	3005.	452298.	2359779.	25.7
60-65	0.05593	88838.	4968.	432747.	1907481.	21.5
65-70	0.09186	83870.	7704.	401284.	1474734.	17.6
70-75	0.14059	76166.	10707.	355087.	1073450.	14.1
75-80	0.19302	65458.	12635.	296319.	718363.	11.0
80-85	0.25844	52824.	13652.	230100.	422044.	8.0
85+	1.00000	39172.	39172.	191944.	191944.	4.9

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[1] IBID.

TABLE 4.24 -Abridged Life Table for All Other, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	$\mathring{e}$x(6)[1]
0-1	0.02331	100000.	2331.	97942.	6855572.	68.6
1-5	0.00344	97669.	336.	389851.	6757630.	69.2
5-10	0.00187	97333.	181.	486168.	6367779.	65.4
10-15	0.00192	97152.	186.	485355.	5881611.	60.5
15-20	0.00487	96966.	472.	483822.	5396256.	55.7
20-25	0.01050	96494.	1012.	480191.	4912434.	50.9
25-30	0.01759	95482.	1679.	473296.	4432243.	46.4
30-35	0.01505	93803.	1412.	465482.	3958948.	42.2
35-40	0.01792	92392.	1656.	458143.	3493466.	37.8
40-45	0.03269	90736.	2966.	446700.	3035323.	33.5
45-50	0.04254	87770.	3742.	429876.	2588523.	29.5
50-55	0.05695	84028.	4785.	408645.	2158747.	25.7
55-60	0.07540	79243.	5975.	381872.	1750102.	22.1
60-65	0.10412	73269.	7628.	347722.	1368230.	18.7
65-70	0.12381	65641.	8127.	308686.	1020508.	15.5
70-75	0.19943	57514.	11470.	260130.	711822.	12.4
75-80	0.30533	46044.	14059.	194455.	451692.	9.8
80-85	0.26566	31985.	8497.	137446.	257237.	8.0
85+	1.00000	23489.	23489.	119791.	119791.	5.1

[1] IBID

TABLE 4.25-- Abridged Life Table for Other Males, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	$\mathring{e}$x(6)[1]
0-1	0.02682	100000.	2682.	97671.	6499287.	65.0
1-5	0.00355	97318.	345.	388452.	6401616.	65.8
5-10	0.00219	96974.	212.	484287.	6013164.	62.0
10-15	0.00243	96762.	234.	483298.	5528877.	57.1
15-20	0.00585	96528.	564.	481471.	5045579.	52.3
20-25	0.01457	95964.	1398.	476788.	4564108.	47.6
25-30	0.02951	94566.	2791.	465994.	4087320.	43.2
30-35	0.02262	91775.	2076.	453532.	3621326.	39.5
35-40	0.02285	89699.	2049.	443704.	3167794.	35.3
40-45	0.04173	87650.	3657.	429577.	2724090.	31.1
45-50	0.05118	83993.	4298.	409643.	2294513.	27.3
50-55	0.07134	79695.	5685.	384827.	1884870.	23.7
55-60	0.09461	74010.	7002.	353122.	1500043.	20.3
60-65	0.12594	67009.	8439.	314309.	1146921.	17.1
65-70	0.14925	58570.	8741.	271687.	832613.	14.2
70-75	0.23596	49828.	11757.	220747.	560926.	11.3
75-80	0.35553	39071.	13535.	155517.	340179.	8.9
80-85	0.28364	24536.	6959.	103811.	184462.	7.5
85+	1.00000	17577.	17577.	80852.	80852.	4.6

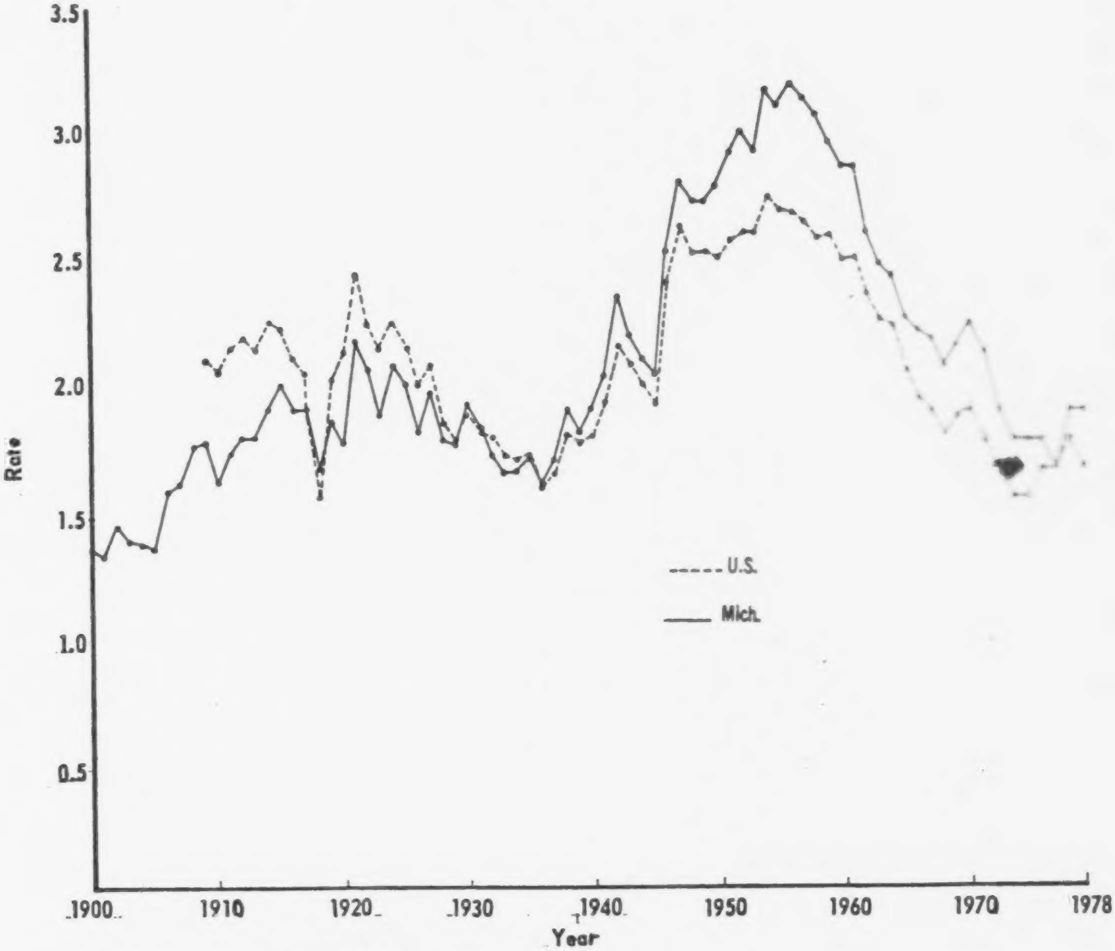
[1] IBID.

TABLE 4.26--Abridged Life Table for Other Females, Michigan Residents, 1978

AGE	nqx(1)[1]	lx(2)[1]	ndx(3)[1]	nLx(4)[1]	Tx(5)[1]	$\mathring{e}$x(6)[1]
0-1	0.01982	100000.	1982.	98212.	7220503.	72.2
1-5	0.00334	98018.	327.	391244.	7122291.	72.7
5-10	0.00155	97692.	151.	488044.	6731047.	68.9
10-15	0.00141	97541.	137.	487411.	6243004.	64.0
15-20	0.00393	97404.	382.	486170.	5755593.	59.1
20-25	0.00659	97022.	639.	483617.	5269423.	54.3
25-30	0.00913	96383.	879.	479757.	4785806.	49.7
30-35	0.00861	95504.	822.	475543.	4306049.	45.1
35-40	0.01317	94682.	1247.	470585.	3830506.	40.5
40-45	0.02358	93436.	2212.	462027.	3359921.	36.0
45-50	0.03360	91224.	3065.	448782.	2897894.	31.8
50-55	0.04290	88159.	3781.	431706.	2449111.	27.8
55-60	0.05714	84377.	4821.	410434.	2017406.	23.9
60-65	0.08366	79557.	6655.	381646.	1606972.	20.2
65-70	0.09912	72901.	7226.	347317.	1225326.	16.8
70-75	0.16524	65676.	10852.	302776.	878009.	13.4
75-80	0.26550	54824.	14556.	237582.	575233.	10.5
80-85	0.25199	40268.	10147.	174996.	337651.	8.4
85+	1.00000	30121.	30121.	162655.	162655.	5.4

[1] IBID.

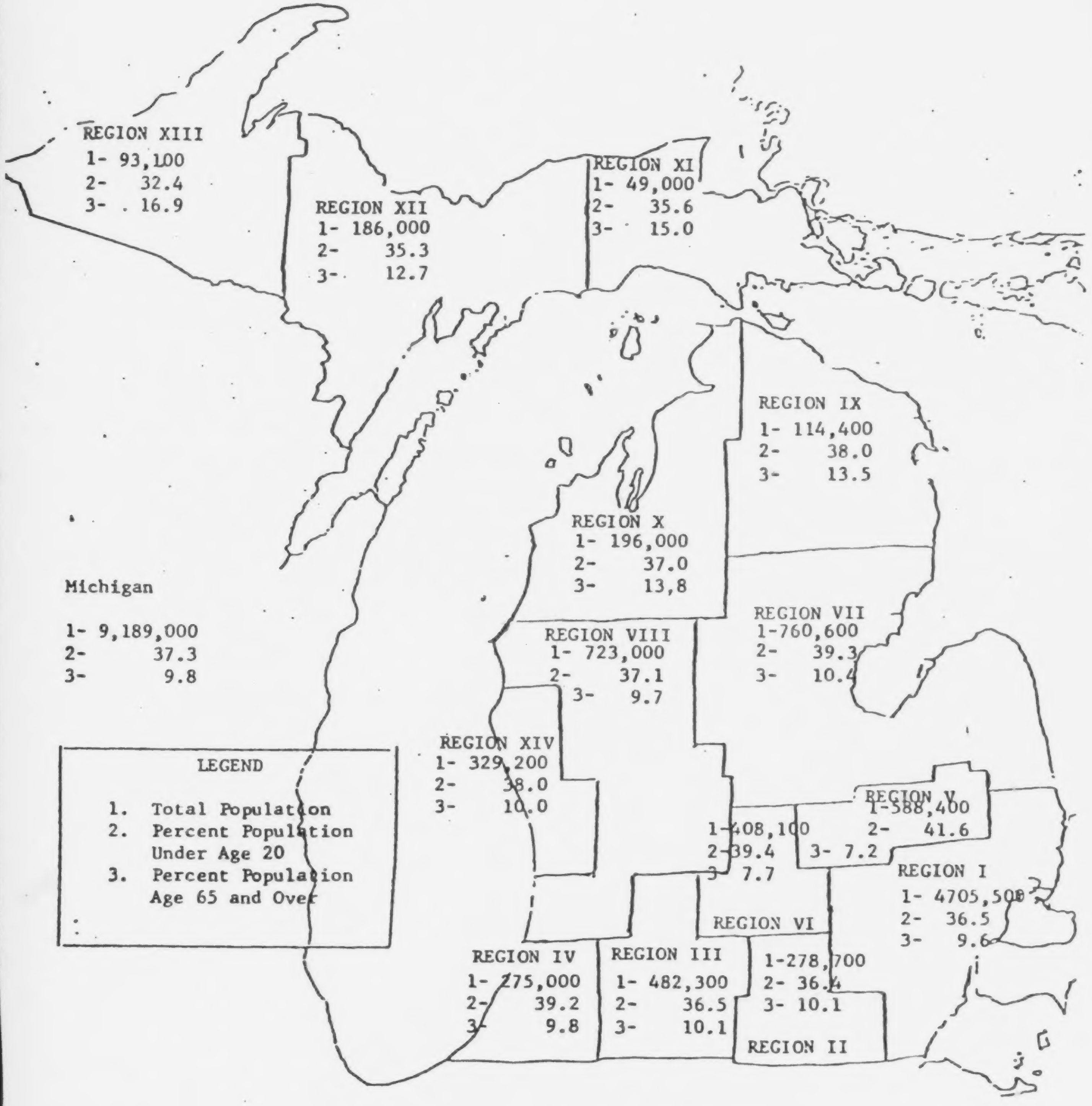
FIGURE 4.1—Rate of Natural Increase, Michigan, 1900-1978, and the United States, 1901¹-1978²



[1] Data not available prior to 1909.

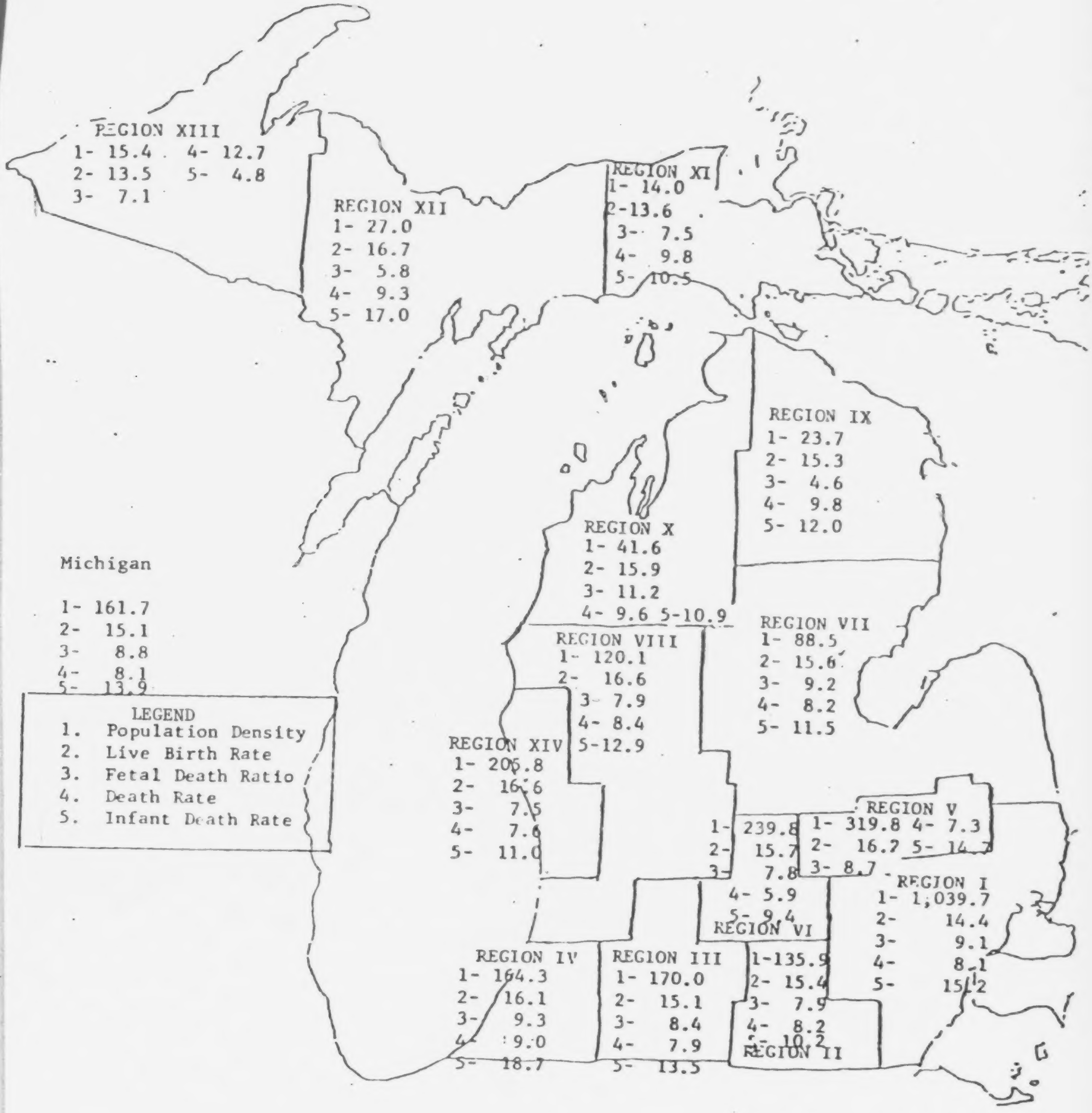
[2] United States rate for 1978 is provisional.

FIGURE 4.2 Total Population, Percent Under Age 20 and Percent Age 65 and over by Region,[1] Michigan, 1978


REGION XIII
1- 93,100
2- 32.4
3- . 16.9
REGION XII
1- 186,000
2- 35.3
3- 12.7
REGION XI
1- 49,000
2- 35.6
3- 15.0
REGION IX
1- 114,400
2- 38.0
3- 13.5
REGION X
1- 196,000
2- 37.0
3- 13,8
Michigan
1- 9,189,000
2- 37.3
3- 9.8
REGION VII
1-760,600
2- 39.3
3- 10.4
REGION VIII
1- 723,000
2- 37.1
3- 9.7
REGION XIV
1- 329,200
2- 38.0
3- 10.0
LEGEND
1. Total Population
2. Percent Population Under Age 20
3. Percent Population Age 65 and Over
REGION V
1-588,400
2- 41.6
3- 7.2
1-408,100
2-39.4
3- 7.7
REGION VI
REGION I
1- 4705,500
2- 36.5
3- 9.6
REGION IV
1- 275,000
2- 39.2
3- 9.8
REGION III
1- 482,300
2- 36.5
3- 10.1
1-278,700
2- 36.4
3- 10.1
REGION II

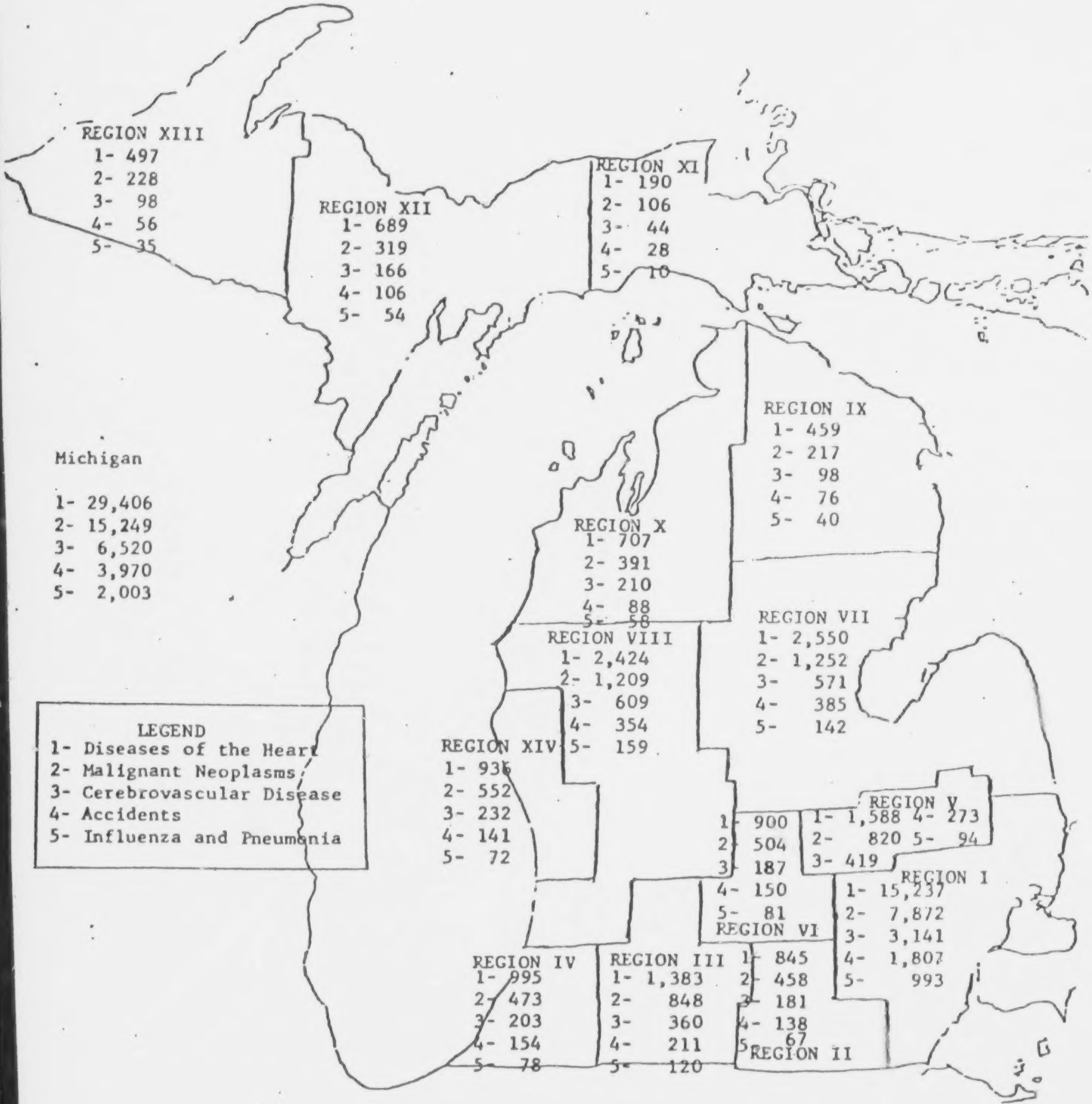
State Planning and Developement Regions - August, 1973

FIGURE 4.3 Population Density, Live Birth Rates, Fetal Death Ratios, Death Rates and Infant Mortality Rates by Region,[1] Michigan Residents, 1978


REGION XIII
1- 15.4 4- 12.7
2- 13.5 5- 4.8
3- 7.1
REGION XII
1- 27.0
2- 16.7
3- 5.8
4- 9.3
5- 17.0
REGION XI
1- 14.0
2-13.6
3- 7.5
4- 9.8
5- 10.5
REGION IX
1- 23.7
2- 15.3
3- 4.6
4- 9.8
5- 12.0
REGION X
1- 41.6
2- 15.9
3- 11.2
4- 9.6 5-10.9
REGION VII
1- 88.5
2- 15.6
3- 9.2
4- 8.2
5- 11.5
REGION VIII
1- 120.1
2- 16.6
3- 7.9
4- 8.4
5-12.9
Michigan
1- 161.7
2- 15.1
3- 8.8
4- 8.1
5- 13.9
LEGEND
1. Population Density
2. Live Birth Rate
3. Fetal Death Ratio
4. Death Rate
5. Infant Death Rate
REGION XIV
1- 205.8
2- 16.6
3- 7.5
4- 7.6
5- 11.0
1- 239.8
2- 15.7
3- 7.8
4- 5.9
5- 9.4
REGION VI
REGION V
1- 319.8 4- 7.3
2- 16.7 5- 14.7
3- 8.7
REGION I
1- 1,039.7
2- 14.4
3- 9.1
4- 8.1
5- 15.2
REGION IV
1- 164.3
2- 16.1
3- 9.3
4- 9.0
5- 18.7
REGION III
1- 170.0
2- 15.1
3- 8.4
4- 7.9
5- 13.5
1-135.9
2- 15.4
3- 7.9
4- 8.2
5- 10.2
REGION II

State Planning and Developement Regions - August, 1973

FIGURE 4.4 Leading Causes of Death; Number of Deaths by Region, Michigan Residents, 1978[1]


REGION XIII
1- 497
2- 228
3- 98
4- 56
5- 35
REGION XII
1- 689
2- 319
3- 166
4- 106
5- 54
REGION XI
1- 190
2- 106
3- 44
4- 28
5- 10
REGION IX
1- 459
2- 217
3- 98
4- 76
5- 40
Michigan
1- 29,406
2- 15,249
3- 6,520
4- 3,970
5- 2,003
REGION X
1- 707
2- 391
3- 210
4- 88
5- 58
REGION VII
1- 2,550
2- 1,252
3- 571
4- 385
5- 142
REGION VIII
1- 2,424
2- 1,209
3- 609
4- 354
5- 159
LEGEND
1- Diseases of the Heart
2- Malignant Neoplasms
3- Cerebrovascular Disease
4- Accidents
5- Influenza and Pneumonia
REGION XIV
1- 936
2- 552
3- 232
4- 141
5- 72
REGION V
1- 1,588 4- 273
2- 820 5- 94
3- 419
1- 900
2- 504
3- 187
4- 150
5- 81
REGION VI
REGION I
1- 15,237
2- 7,872
3- 3,141
4- 1,807
5- 993
REGION IV
1- 995
2- 473
3- 203
4- 154
5- 78
REGION III
1- 1,383
2- 848
3- 360
4- 211
5- 120
1- 845
2- 458
3- 181
4- 138
5- 67
REGION II

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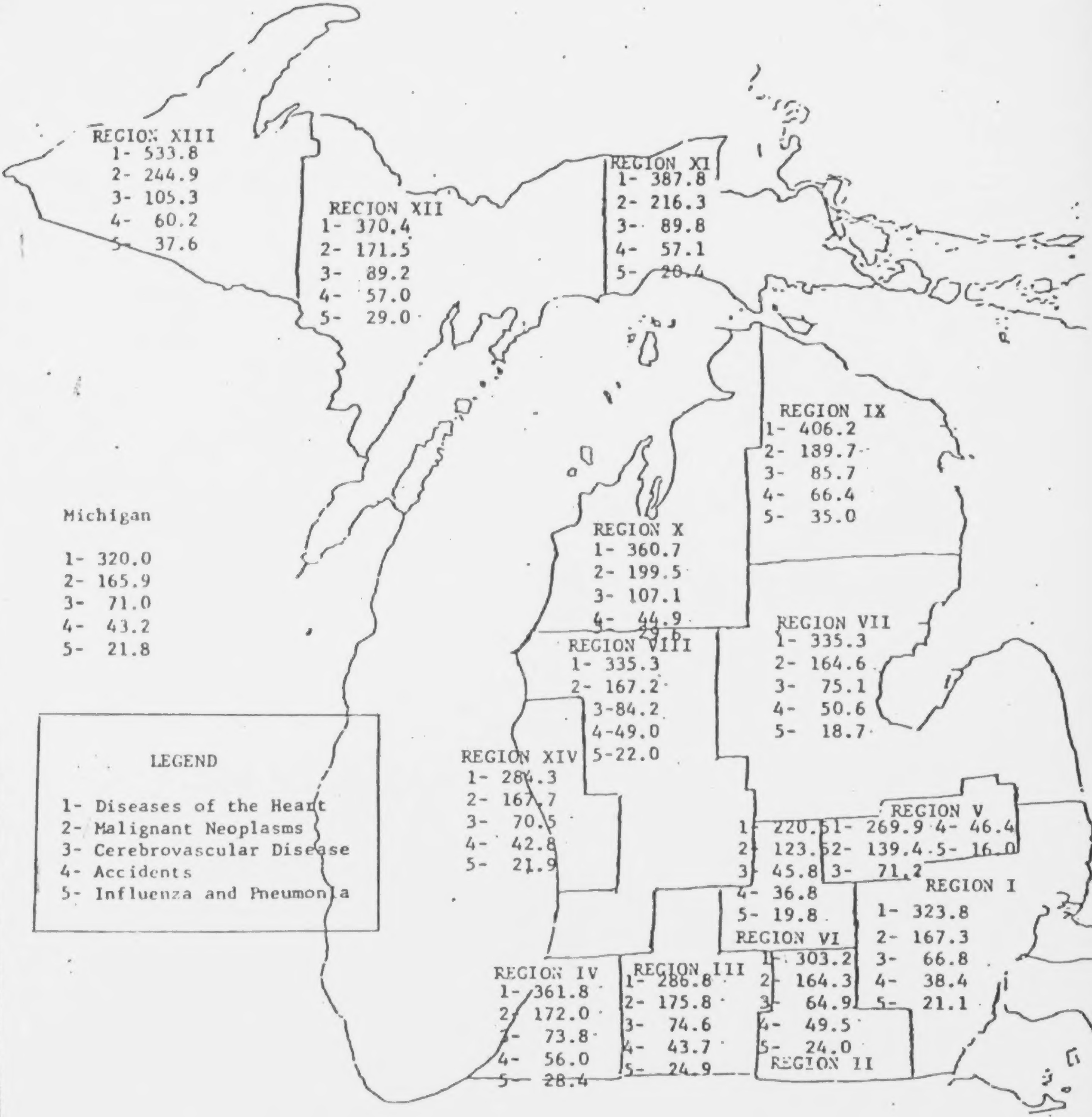
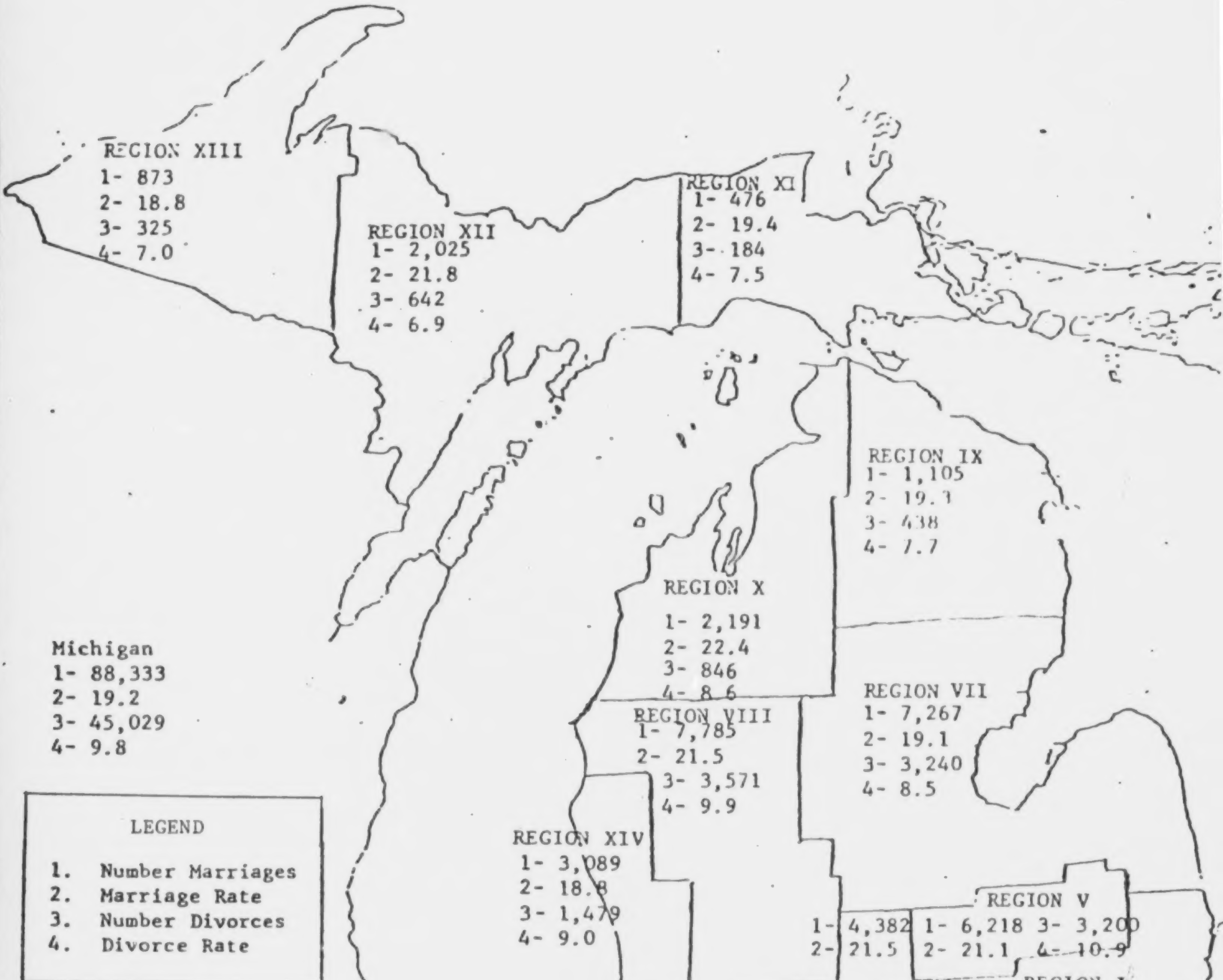
1 State Planning and Developement Regions - August, 1973

FIGURE 4.5 Leading Causes of Death: Death Rates by Region, Michigan Residents, 1978[1]


REGION XIII
1- 533.8
2- 244.9
3- 105.3
4- 60.2
5- 37.6
REGION XII
1- 370.4
2- 171.5
3- 89.2
4- 57.0
5- 29.0
REGION XI
1- 387.8
2- 216.3
3- 89.8
4- 57.1
5- 28.4
REGION IX
1- 406.2
2- 189.7
3- 85.7
4- 66.4
5- 35.0
REGION X
1- 360.7
2- 199.5
3- 107.1
4- 44.9
5- 29.6
REGION VII
1- 335.3
2- 164.6
3- 75.1
4- 50.6
5- 18.7
REGION VIII
1- 335.3
2- 167.2
3-84.2
4-49.0
5-22.0
Michigan
1- 320.0
2- 165.9
3- 71.0
4- 43.2
5- 21.8
LEGEND
1- Diseases of the Heart
2- Malignant Neoplasms
3- Cerebrovascular Disease
4- Accidents
5- Influenza and Pneumonia
REGION XIV
1- 284.3
2- 167.7
3- 70.5
4- 42.8
5- 21.9
REGION V
1- 269.9
2- 139.4
3- 71.2
4- 46.4
5- 16.0
1- 220.5
2- 123.5
3- 45.8
4- 36.8
5- 19.8
REGION VI
REGION I
1- 323.8
2- 167.3
3- 66.8
4- 38.4
5- 21.1
REGION IV
1- 361.8
2- 172.0
3- 73.8
4- 56.0
5- 28.4
REGION III
1- 286.8
2- 175.8
3- 74.6
4- 43.7
5- 24.9
1- 303.2
2- 164.3
3- 64.9
4- 49.5
5- 24.0
REGION II

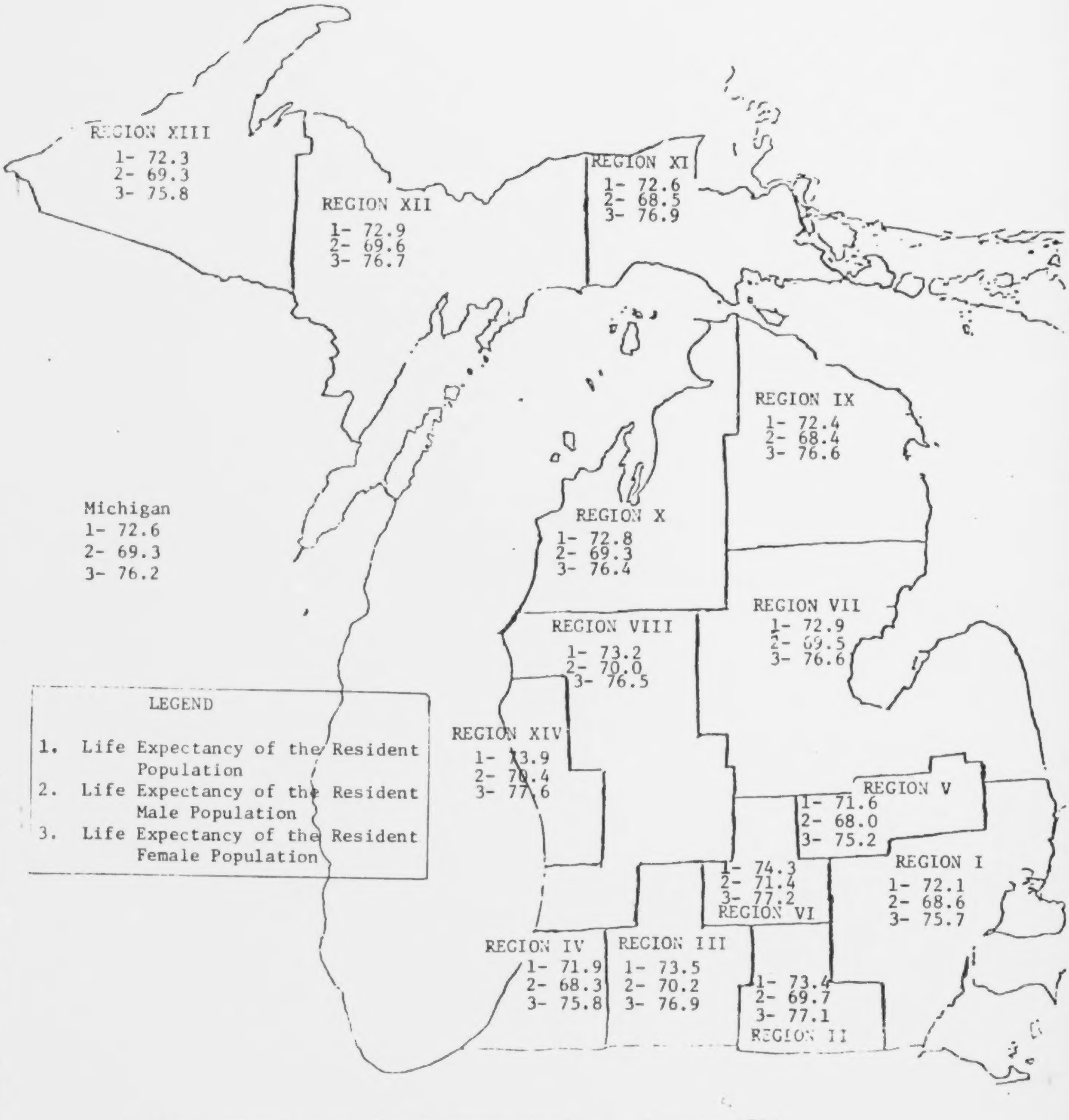
1 State Planning and Developement Regions - August, 1973

FIGURE 4.6 Marriages and Marriage Rates, Divorces and Divorce Rates by Region.[1] Michigan Residents, 1978


REGION XIII
1- 873
2- 18.8
3- 325
4- 7.0
REGION XII
1- 2,025
2- 21.8
3- 642
4- 6.9
REGION XI
1- 476
2- 19.4
3- 184
4- 7.5
REGION IX
1- 1,105
2- 19.3
3- 438
4- 7.7
REGION X
1- 2,191
2- 22.4
3- 846
4- 8.6
REGION VIII
1- 7,785
2- 21.5
3- 3,571
4- 9.9
REGION VII
1- 7,267
2- 19.1
3- 3,240
4- 8.5
Michigan
1- 88,333
2- 19.2
3- 45,029
4- 9.8
LEGEND
1. Number Marriages
2. Marriage Rate
3. Number Divorces
4. Divorce Rate
REGION XIV
1- 3,089
2- 18.8
3- 1,479
4- 9.0
REGION V
1- 6,218 3- 3,200
2- 21.1 4- 10.9
1- 4,382
2- 21.5
3- 2,203
4- 10.8
REGION VI
REGION I
1- 41,747
2- 17.7
3- 23,199
4- 9.9
REGION IV
1- 2,956
2- 21.5
3- 1,541
4- 11.2
REGION III
1- 5,373
2- 22.3
3- 2,723
4- 11.3
1- 2,846
2- 20.4
3- 1,438
4- 10.3
REGION II

[1] State Planning and Developement Regions - August, 1973

FIGURE 4.7 Life Expectancy at Birth By Sex By Region[1]; Michigan Residents, 1976-1978


REGION XIII
1- 72.3
2- 69.3
3- 75.8
REGION XII
1- 72.9
2- 69.6
3- 76.7
REGION XI
1- 72.6
2- 68.5
3- 76.9
REGION IX
1- 72.4
2- 68.4
3- 76.6
Michigan
1- 72.6
2- 69.3
3- 76.2
REGION X
1- 72.8
2- 69.3
3- 76.4
REGION VII
1- 72.9
2- 69.5
3- 76.6
REGION VIII
1- 73.2
2- 70.0
3- 76.5
LEGEND
1. Life Expectancy of the Resident Population
2. Life Expectancy of the Resident Male Population
3. Life Expectancy of the Resident Female Population
REGION XIV
1- 73.9
2- 70.4
3- 77.6
REGION V
1- 71.6
2- 68.0
3- 75.2
REGION I
1- 72.1
2- 68.6
3- 75.7
1- 74.3
2- 71.4
3- 77.2
REGION VI
REGION IV
1- 71.9
2- 68.3
3- 75.8
REGION III
1- 73.5
2- 70.2
3- 76.9
1- 73.4
2- 69.7
3- 77.1
REGION II

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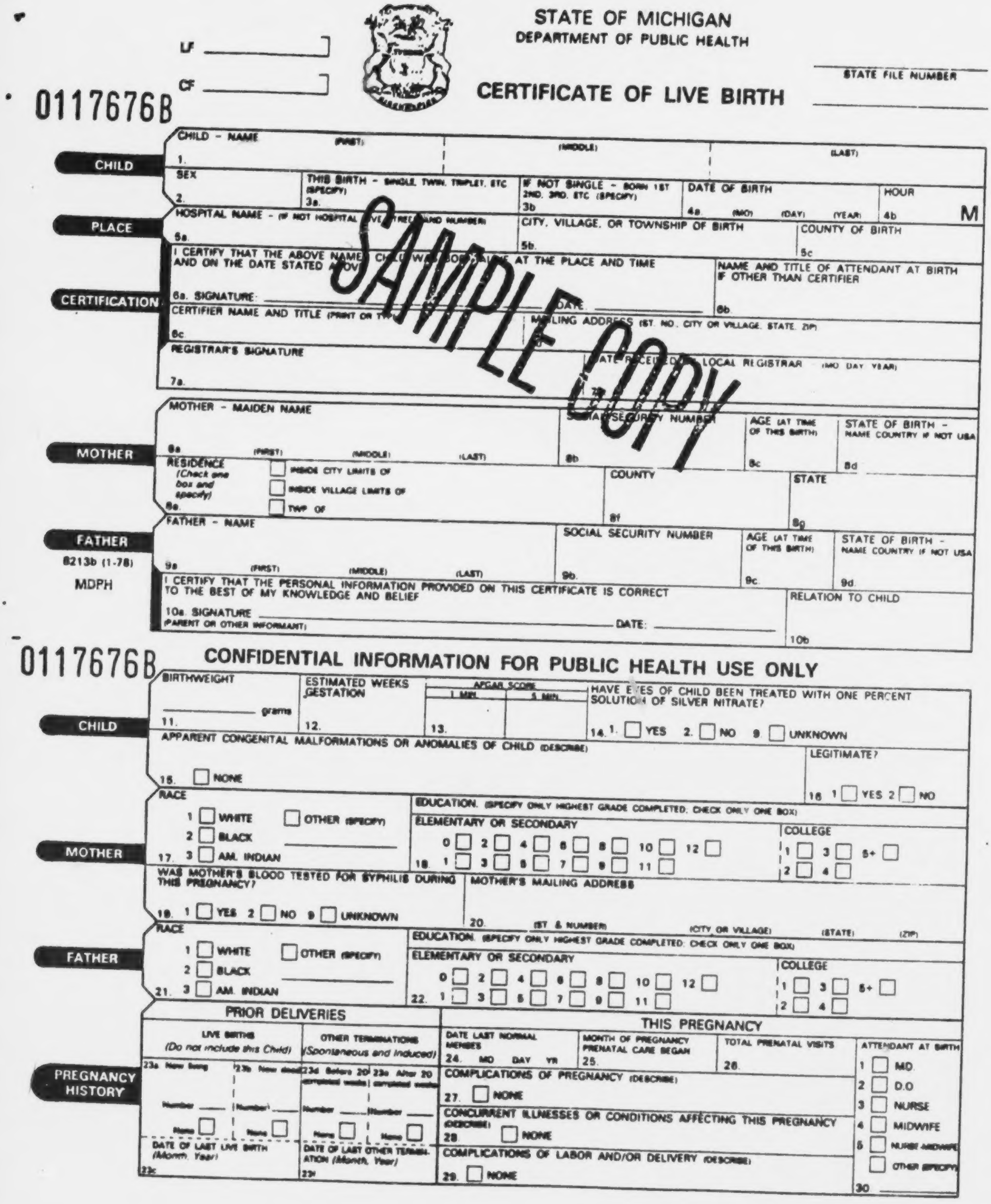
[1] State Planning and Developement Regions - August, 1973

Fig. 4.8



STATE OF MICHIGAN
DEPARTMENT OF PUBLIC HEALTH

LF ______

CF ______

STATE FILE NUMBER ______

0117676B

CERTIFICATE OF LIVE BIRTH

SAMPLE COPY

CHILD
CHILD - NAME (FIRST) (MIDDLE) (LAST) 1.
SEX 2.
THIS BIRTH - SINGLE, TWIN, TRIPLET, ETC (SPECIFY) 3a.
IF NOT SINGLE - BORN 1ST 2ND, 3RD, ETC (SPECIFY) 3b
DATE OF BIRTH 4a. (MO) (DAY) (YEAR)
HOUR 4b M

PLACE
HOSPITAL NAME - (IF NOT HOSPITAL GIVE STREET AND NUMBER) 5a.
CITY, VILLAGE, OR TOWNSHIP OF BIRTH 5b.
COUNTY OF BIRTH 5c

CERTIFICATION
I CERTIFY THAT THE ABOVE NAMED CHILD WAS BORN ALIVE AT THE PLACE AND TIME AND ON THE DATE STATED ABOVE
6a. SIGNATURE: ______ DATE: ______
NAME AND TITLE OF ATTENDANT AT BIRTH IF OTHER THAN CERTIFIER 6b
CERTIFIER NAME AND TITLE (PRINT OR TYPE) 6c
MAILING ADDRESS (ST. NO., CITY OR VILLAGE, STATE, ZIP)
REGISTRAR'S SIGNATURE 7a.
DATE RECEIVED BY LOCAL REGISTRAR (MO DAY YEAR)

MOTHER
MOTHER - MAIDEN NAME 8a (FIRST) (MIDDLE) (LAST)
SOCIAL SECURITY NUMBER 8b
AGE (AT TIME OF THIS BIRTH) 8c
STATE OF BIRTH - NAME COUNTRY IF NOT USA 8d
RESIDENCE (Check one box and specify) 8e. ☐ INSIDE CITY LIMITS OF ☐ INSIDE VILLAGE LIMITS OF ☐ TWP OF
COUNTY 8f
STATE 8g

FATHER
FATHER - NAME 9a (FIRST) (MIDDLE) (LAST)
SOCIAL SECURITY NUMBER 9b.
AGE (AT TIME OF THIS BIRTH) 9c.
STATE OF BIRTH - NAME COUNTRY IF NOT USA 9d.

8213b (1-78)
MDPH

I CERTIFY THAT THE PERSONAL INFORMATION PROVIDED ON THIS CERTIFICATE IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF
10a. SIGNATURE ______ DATE: ______
(PARENT OR OTHER INFORMANT)
RELATION TO CHILD 10b

0117676B

CONFIDENTIAL INFORMATION FOR PUBLIC HEALTH USE ONLY

CHILD
BIRTHWEIGHT 11. ______ grams
ESTIMATED WEEKS GESTATION 12.
APGAR SCORE 13. 1 MIN 5 MIN
HAVE EYES OF CHILD BEEN TREATED WITH ONE PERCENT SOLUTION OF SILVER NITRATE? 14. 1. ☐ YES 2. ☐ NO 9. ☐ UNKNOWN
APPARENT CONGENITAL MALFORMATIONS OR ANOMALIES OF CHILD (DESCRIBE) 15. ☐ NONE
LEGITIMATE? 16 1 ☐ YES 2 ☐ NO

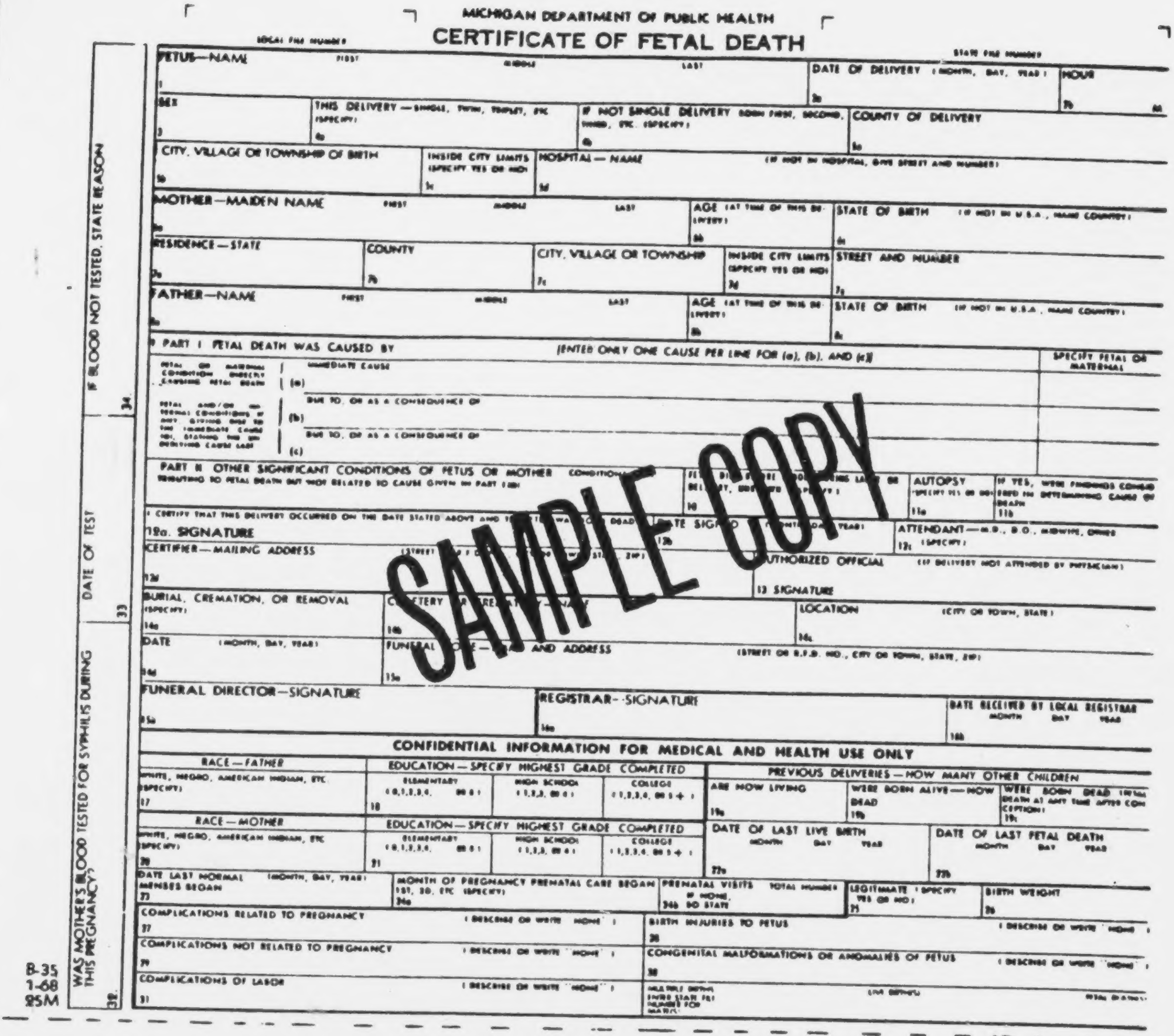
MOTHER
RACE 17. 1 ☐ WHITE 2 ☐ BLACK 3 ☐ AM. INDIAN ☐ OTHER (SPECIFY) ______
EDUCATION. (SPECIFY ONLY HIGHEST GRADE COMPLETED; CHECK ONLY ONE BOX)
ELEMENTARY OR SECONDARY 18. 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐
COLLEGE 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+ ☐
WAS MOTHER'S BLOOD TESTED FOR SYPHILIS DURING THIS PREGNANCY? 19. 1 ☐ YES 2 ☐ NO 9 ☐ UNKNOWN
MOTHER'S MAILING ADDRESS 20. (ST & NUMBER) (CITY OR VILLAGE) (STATE) (ZIP)

FATHER
RACE 21. 1 ☐ WHITE 2 ☐ BLACK 3 ☐ AM. INDIAN ☐ OTHER (SPECIFY) ______
EDUCATION. (SPECIFY ONLY HIGHEST GRADE COMPLETED; CHECK ONLY ONE BOX)
ELEMENTARY OR SECONDARY 22. 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐
COLLEGE 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+ ☐

PREGNANCY HISTORY
PRIOR DELIVERIES
LIVE BIRTHS (Do not include this Child)
23a Now living Number ______ None ☐
23b Now dead Number ______ None ☐
DATE OF LAST LIVE BIRTH (Month, Year) 23c
OTHER TERMINATIONS (Spontaneous and Induced)
23d Before 20 completed weeks Number ______ None ☐
23e After 20 completed weeks Number ______ None ☐
DATE OF LAST OTHER TERMINATION (Month, Year) 23f

THIS PREGNANCY
DATE LAST NORMAL MENSES 24. MO DAY YR
MONTH OF PREGNANCY PRENATAL CARE BEGAN 25.
TOTAL PRENATAL VISITS 26.
COMPLICATIONS OF PREGNANCY (DESCRIBE) 27. ☐ NONE
CONCURRENT ILLNESSES OR CONDITIONS AFFECTING THIS PREGNANCY (DESCRIBE) 28. ☐ NONE
COMPLICATIONS OF LABOR AND/OR DELIVERY (DESCRIBE) 29. ☐ NONE
ATTENDANT AT BIRTH 1 ☐ MD 2 ☐ D.O 3 ☐ NURSE 4 ☐ MIDWIFE 5 ☐ NURSE MIDWIFE ☐ OTHER (SPECIFY) 30 ______

FIGURE 4.9



MICHIGAN DEPARTMENT OF PUBLIC HEALTH

CERTIFICATE OF FETAL DEATH

LOCAL FILE NUMBER

STATE FILE NUMBER

1 FETUS—NAME FIRST MIDDLE LAST

2a DATE OF DELIVERY (MONTH, DAY, YEAR)

2b HOUR M.

3 SEX

4a THIS DELIVERY—SINGLE, TWIN, TRIPLET, ETC. (SPECIFY)

4b IF NOT SINGLE DELIVERY BORN FIRST, SECOND, THIRD, ETC. (SPECIFY)

5a COUNTY OF DELIVERY

5b CITY, VILLAGE OR TOWNSHIP OF BIRTH

5c INSIDE CITY LIMITS (SPECIFY YES OR NO)

5d HOSPITAL—NAME (IF NOT IN HOSPITAL, GIVE STREET AND NUMBER)

6a MOTHER—MAIDEN NAME FIRST MIDDLE LAST

6b AGE (AT TIME OF THIS DELIVERY)

6c STATE OF BIRTH (IF NOT IN U.S.A., NAME COUNTRY)

7a RESIDENCE—STATE

7b COUNTY

7c CITY, VILLAGE OR TOWNSHIP

7d INSIDE CITY LIMITS (SPECIFY YES OR NO)

7e STREET AND NUMBER

8a FATHER—NAME FIRST MIDDLE LAST

8b AGE (AT TIME OF THIS DELIVERY)

8c STATE OF BIRTH (IF NOT IN U.S.A., NAME COUNTRY)

9 PART I FETAL DEATH WAS CAUSED BY (ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c))

SPECIFY FETAL OR MATERNAL

FETAL OR MATERNAL CONDITION DIRECTLY CAUSING FETAL DEATH (a) IMMEDIATE CAUSE

FETAL AND/OR MATERNAL CONDITIONS IF ANY, GIVING RISE TO THE IMMEDIATE CAUSE (a), STATING THE UNDERLYING CAUSE LAST (b) DUE TO, OR AS A CONSEQUENCE OF

(c) DUE TO, OR AS A CONSEQUENCE OF

PART II OTHER SIGNIFICANT CONDITIONS OF FETUS OR MOTHER CONDITIONS CONTRIBUTING TO FETAL DEATH BUT NOT RELATED TO CAUSE GIVEN IN PART I (a)

10 FETUS DIED BEFORE LABOR, DURING LABOR OR DELIVERY, UNKNOWN (SPECIFY)

11a AUTOPSY (SPECIFY YES OR NO)

11b IF YES, WERE FINDINGS CONSIDERED IN DETERMINING CAUSE OF DEATH

I CERTIFY THAT THIS DELIVERY OCCURRED ON THE DATE STATED ABOVE AND THE FETUS WAS BORN DEAD

12a. SIGNATURE

12b DATE SIGNED (MONTH, DAY, YEAR)

12c ATTENDANT—M.D., D.O., MIDWIFE, OTHER (SPECIFY)

12d CERTIFIER—MAILING ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)

AUTHORIZED OFFICIAL (IF DELIVERY NOT ATTENDED BY PHYSICIAN)

13 SIGNATURE

14a BURIAL, CREMATION, OR REMOVAL (SPECIFY)

14b CEMETERY OR CREMATORY—NAME

14c LOCATION (CITY OR TOWN, STATE)

14d DATE (MONTH, DAY, YEAR)

15a FUNERAL HOME—NAME AND ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)

15b FUNERAL DIRECTOR—SIGNATURE

16a REGISTRAR—SIGNATURE

16b DATE RECEIVED BY LOCAL REGISTRAR MONTH DAY YEAR

CONFIDENTIAL INFORMATION FOR MEDICAL AND HEALTH USE ONLY

17 RACE—FATHER WHITE, NEGRO, AMERICAN INDIAN, ETC. (SPECIFY)

18 EDUCATION—SPECIFY HIGHEST GRADE COMPLETED ELEMENTARY (0,1,2,3,4, OR 5) HIGH SCHOOL (1,2,3, OR 4) COLLEGE (1,2,3,4, OR 5+)

PREVIOUS DELIVERIES—HOW MANY OTHER CHILDREN

19a ARE NOW LIVING

19b WERE BORN ALIVE—NOW DEAD

19c WERE BORN DEAD (FETAL DEATH AT ANY TIME AFTER CONCEPTION)

20 RACE—MOTHER WHITE, NEGRO, AMERICAN INDIAN, ETC. (SPECIFY)

21 EDUCATION—SPECIFY HIGHEST GRADE COMPLETED ELEMENTARY (0,1,2,3,4, OR 5) HIGH SCHOOL (1,2,3, OR 4) COLLEGE (1,2,3,4, OR 5+)

22a DATE OF LAST LIVE BIRTH MONTH DAY YEAR

22b DATE OF LAST FETAL DEATH MONTH DAY YEAR

23 DATE LAST NORMAL MENSES BEGAN (MONTH, DAY, YEAR)

24a MONTH OF PREGNANCY PRENATAL CARE BEGAN 1ST, 2D, ETC. (SPECIFY)

24b PRENATAL VISITS TOTAL NUMBER (IF NONE, SO STATE)

25 LEGITIMATE (SPECIFY YES OR NO)

26 BIRTH WEIGHT

27 COMPLICATIONS RELATED TO PREGNANCY (DESCRIBE OR WRITE "NONE")

28 BIRTH INJURIES TO FETUS (DESCRIBE OR WRITE "NONE")

29 COMPLICATIONS NOT RELATED TO PREGNANCY (DESCRIBE OR WRITE "NONE")

30 CONGENITAL MALFORMATIONS OR ANOMALIES OF FETUS (DESCRIBE OR WRITE "NONE")

31 COMPLICATIONS OF LABOR (DESCRIBE OR WRITE "NONE")

MULTIPLE BIRTHS ENTER STATE FILE NUMBER FOR MATE(S) LIVE BIRTH(S) FETAL DEATH(S)

32. WAS MOTHER'S BLOOD TESTED FOR SYPHILIS DURING THIS PREGNANCY?

33 DATE OF TEST

34. IF BLOOD NOT TESTED, STATE REASON

B-35
1-68
25M

SAMPLE COPY

DETACH INSTRUCTIONS BEFORE FILING CERTIFICATE WITH REGISTRAR

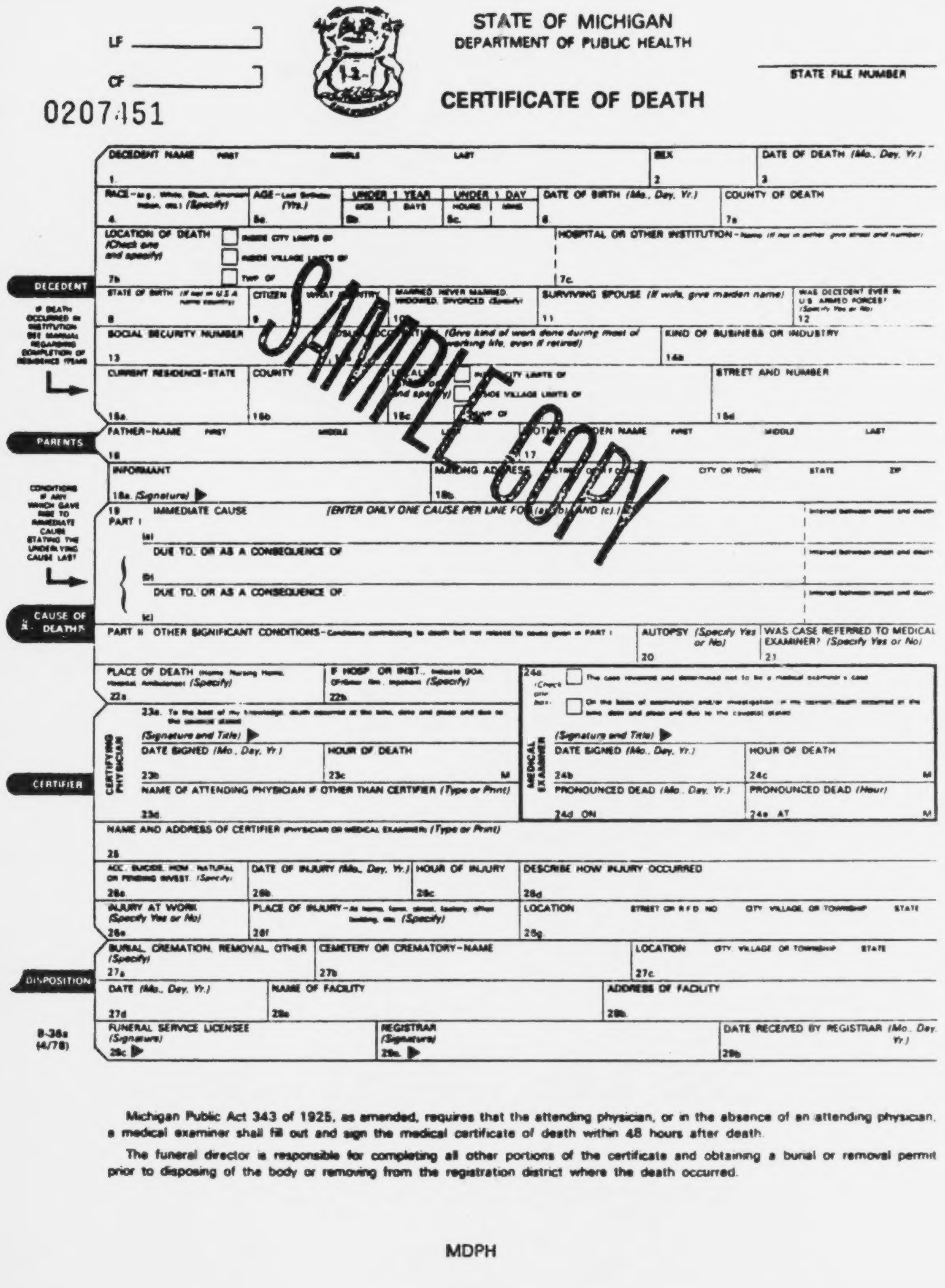
TYPE OR PRINT (EXCEPT SIGNATURES) IN BLACK INK—THIS IS A PERMANENT RECORD

Michigan Public Act 343 of 1925, as amended, requires that the attending physician, or in the absence of an attending physician, a coroner shall fill out and sign the medical certificate of fetal death (stillbirth) within 24 hours after death.

The funeral director is responsible for completing all other portions of the certificate and obtaining a burial or removal permit prior to disposing of the body, or removing from the registration district where the death occurred.

Many important legal, personal, public health, and social welfare interests require complete and accurate registration of all fetal deaths. Social and health agencies need medical and social information concerning the child and his parents for administrative and statistical purposes. In order to protect the privacy of the individual to whom this certificate applies, most of the information of this type has been placed in a section of the certificate labeled. "Confidential Information for Medical and Health Use Only."

Fig. 4.10



LF

CF

0207451

STATE OF MICHIGAN
DEPARTMENT OF PUBLIC HEALTH

CERTIFICATE OF DEATH

STATE FILE NUMBER

SAMPLE COPY

DECEDENT

IF DEATH OCCURRED IN INSTITUTION SEE MANUAL REGARDING COMPLETION OF RESIDENCE ITEMS

DECEDENT NAME FIRST MIDDLE LAST 1. | SEX 2 | DATE OF DEATH *(Mo., Day, Yr.)* 3

RACE—e.g., White, Black, American Indian, etc.) *(Specify)* 4. | AGE—Last Birthday *(Yrs.)* 5a. | UNDER 1 YEAR MOS DAYS 5b. | UNDER 1 DAY HOURS MINS 5c. | DATE OF BIRTH *(Mo., Day, Yr.)* 6. | COUNTY OF DEATH 7a

LOCATION OF DEATH *(Check one and specify)* 7b ☐ INSIDE CITY LIMITS OF ☐ INSIDE VILLAGE LIMITS OF ☐ TWP OF | HOSPITAL OR OTHER INSTITUTION—Name (If not in either, give street and number) 7c.

STATE OF BIRTH (If not in U.S.A. name country) 8 | CITIZEN OF WHAT COUNTRY 9 | MARRIED, NEVER MARRIED, WIDOWED, DIVORCED (Specify) 10 | SURVIVING SPOUSE *(If wife, give maiden name)* 11 | WAS DECEDENT EVER IN U.S. ARMED FORCES? (Specify Yes or No) 12

SOCIAL SECURITY NUMBER 13 | USUAL OCCUPATION *(Give kind of work done during most of working life, even if retired)* | KIND OF BUSINESS OR INDUSTRY 14b

CURRENT RESIDENCE-STATE 15a. | COUNTY 15b | LOCALITY (Check one and specify) 15c ☐ INSIDE CITY LIMITS OF ☐ INSIDE VILLAGE LIMITS OF ☐ TWP OF | STREET AND NUMBER 15d

PARENTS

FATHER-NAME FIRST MIDDLE LAST 16 | MOTHER-MAIDEN NAME FIRST MIDDLE LAST 17

INFORMANT 18a. *(Signature)* ▶ | MAILING ADDRESS STREET OR R.F.D. NO. CITY OR TOWN STATE ZIP 18b.

CAUSE OF DEATH

CONDITIONS IF ANY WHICH GAVE RISE TO IMMEDIATE CAUSE STATING THE UNDERLYING CAUSE LAST

19 PART I IMMEDIATE CAUSE *(ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c).)* | Interval between onset and death

(a)

DUE TO, OR AS A CONSEQUENCE OF | Interval between onset and death

(b)

DUE TO, OR AS A CONSEQUENCE OF | Interval between onset and death

(c)

PART II OTHER SIGNIFICANT CONDITIONS—Conditions contributing to death but not related to cause given in PART I | AUTOPSY *(Specify Yes or No)* 20 | WAS CASE REFERRED TO MEDICAL EXAMINER? *(Specify Yes or No)* 21

PLACE OF DEATH (Home, Nursing Home, Hospital, Ambulance) *(Specify)* 22a | IF HOSP. OR INST., Indicate DOA, OP/Emer. Rm., Inpatient *(Specify)* 22b

CERTIFIER

CERTIFYING PHYSICIAN

23a. To the best of my knowledge, death occurred at the time, date and place and due to the cause(s) stated.
(Signature and Title) ▶
DATE SIGNED *(Mo., Day, Yr.)* 23b | HOUR OF DEATH 23c M
NAME OF ATTENDING PHYSICIAN IF OTHER THAN CERTIFIER *(Type or Print)* 23d.

MEDICAL EXAMINER

24a (Check one box)
☐ The case reviewed and determined not to be a medical examiner's case
☐ On the basis of examination and/or investigation, in my opinion death occurred at the time, date and place and due to the cause(s) stated.
(Signature and Title) ▶
DATE SIGNED *(Mo., Day, Yr.)* 24b | HOUR OF DEATH 24c M
PRONOUNCED DEAD *(Mo., Day, Yr.)* 24d ON | PRONOUNCED DEAD *(Hour)* 24e AT M

NAME AND ADDRESS OF CERTIFIER (PHYSICIAN OR MEDICAL EXAMINER) *(Type or Print)* 25

ACC., SUICIDE, HOM., NATURAL OR PENDING INVEST. *(Specify)* 26a. | DATE OF INJURY *(Mo., Day, Yr.)* 26b. | HOUR OF INJURY 26c | DESCRIBE HOW INJURY OCCURRED 26d

INJURY AT WORK *(Specify Yes or No)* 26e | PLACE OF INJURY—At home, farm, street, factory, office building, etc. *(Specify)* 26f | LOCATION STREET OR R.F.D. NO. CITY, VILLAGE, OR TOWNSHIP STATE 26g.

DISPOSITION

BURIAL, CREMATION, REMOVAL, OTHER *(Specify)* 27a | CEMETERY OR CREMATORY—NAME 27b | LOCATION CITY, VILLAGE OR TOWNSHIP STATE 27c.

DATE *(Mo., Day, Yr.)* 27d | NAME OF FACILITY 28a | ADDRESS OF FACILITY 28b.

FUNERAL SERVICE LICENSEE *(Signature)* 28c ▶ | REGISTRAR *(Signature)* 29a. ▶ | DATE RECEIVED BY REGISTRAR *(Mo., Day, Yr.)* 29b

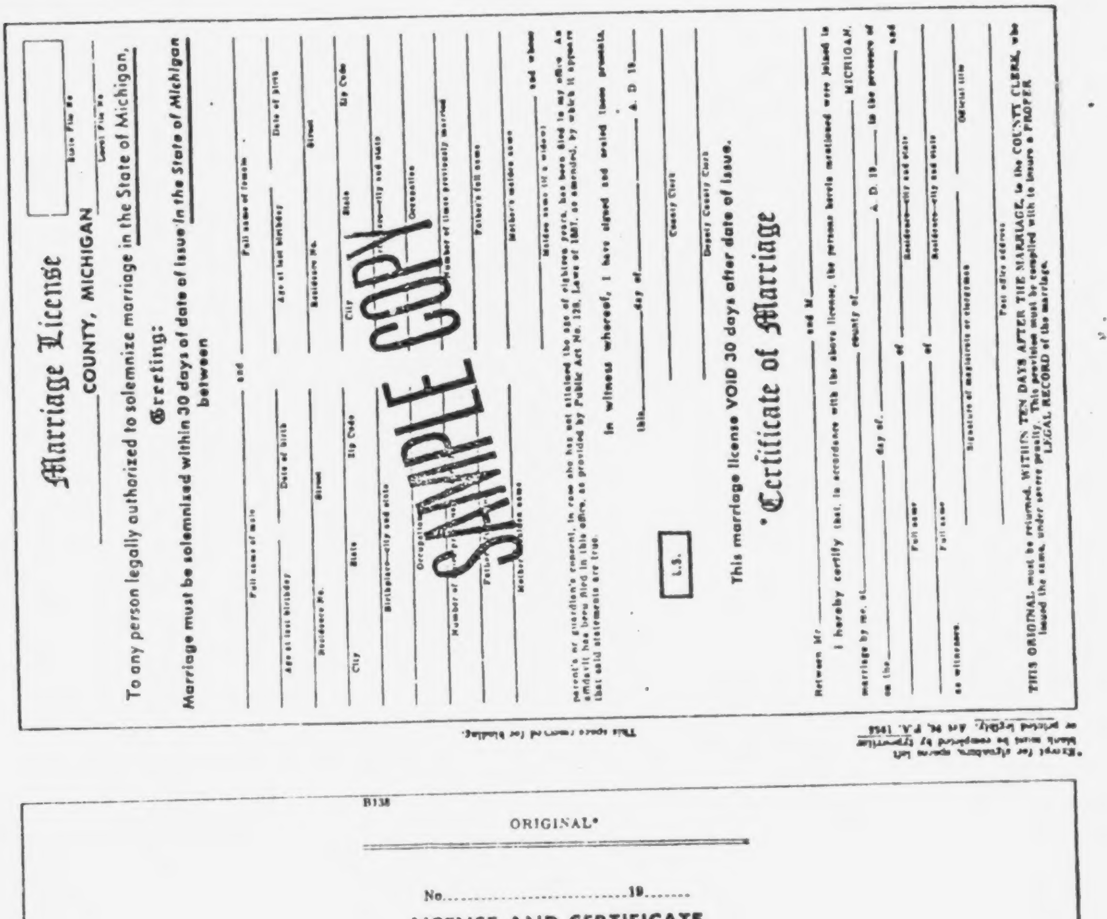
B-36a
(4/78)

Michigan Public Act 343 of 1925, as amended, requires that the attending physician, or in the absence of an attending physician, a medical examiner shall fill out and sign the medical certificate of death within 48 hours after death.

The funeral director is responsible for completing all other portions of the certificate and obtaining a burial or removal permit prior to disposing of the body or removing from the registration district where the death occurred.

MDPH

FIGURE 4.11



Marriage License

State File No.

__________ COUNTY, MICHIGAN

Local File No.

To any person legally authorized to solemnize marriage in the State of Michigan,

Greeting:

Marriage must be solemnized within 30 days of date of issue in the State of Michigan between

__________ and __________
Full name of male / Full name of female

Age at last birthday / Date of birth / Age at last birthday / Date of birth

Residence No. / Street / Residence No. / Street

City / State / Zip Code / City / State / Zip Code

Birthplace—city and state / Birthplace—city and state

Occupation / Occupation

Number of times previously married / Number of times previously married

Father's full name / Father's full name

Mother's maiden name / Mother's maiden name

__________ and whose
Maiden name (if a widow)

parent's or guardian's consent, in case she has not attained the age of eighteen years, has been filed in my office. An affidavit has been filed in this office, as provided by Public Act No. 128, Laws of 1887, as amended, by which it appears that said statements are true.

In witness whereof, I have signed and sealed these presents,

this__________day of__________ A. D. 19____

L.S.

County Clerk

Deputy County Clerk

This marriage license VOID 30 days after date of issue.

***Certificate of Marriage**

Between Mr __________ and M__________

I hereby certify that, in accordance with the above license, the persons herein mentioned were joined in marriage by me, at__________ county of__________ MICHIGAN, on the__________ day of__________ A. D. 19____ in the presence of

__________ of __________ and
Full name / Residence—city and state

__________ of __________
Full name / Residence—city and state

as witnesses.

Signature of magistrate or clergyman / Official title

Post office address

THIS ORIGINAL must be returned, WITHIN TEN DAYS AFTER THE MARRIAGE, to the COUNTY CLERK, who issued the same, under severe penalty. This provision must be complied with to insure a PROPER LEGAL RECORD of the marriage.

This space reserved for binding.

*Except for signatures, spaces left blank must be completed by typewriter or printed legibly. Act 96, P.A. 1964

B138

ORIGINAL*

No.__________19______

LICENSE AND CERTIFICATE OF MARRIAGE

____

and

____

CLERK'S OFFICE
County of__________

Received for record the__________day of

__________A. D. 19______ and recorded

In liber__________of marriages, on page__________

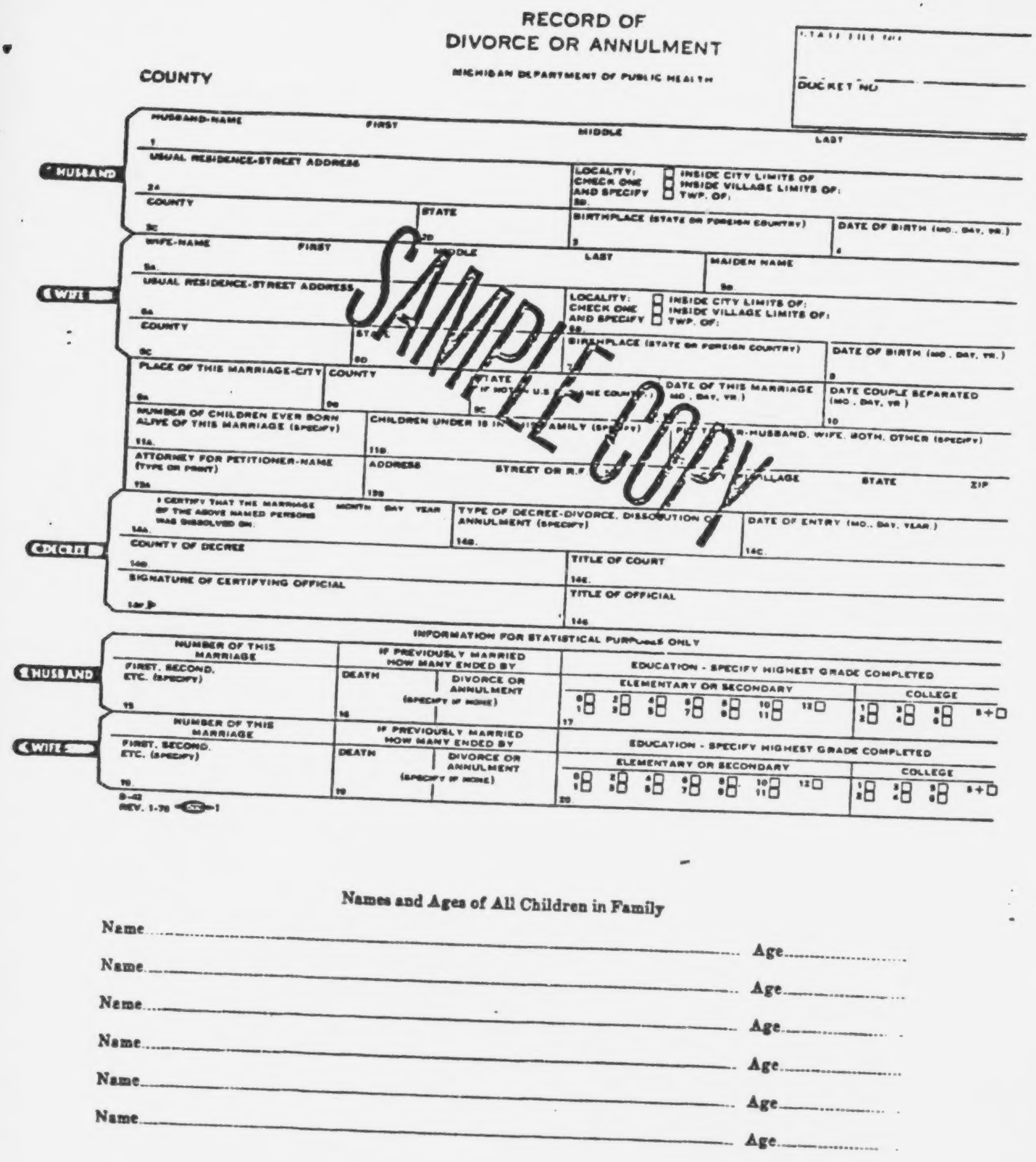
__________ Clerk

*THIS ORIGINAL must be returned WITHIN TEN DAYS AFTER THE MARRIAGE, to the County Clerk who issued the same, under severe penalty. This provision must be complied with to insure a PROPER LEGAL RECORD of the marriage.

THE DUPLICATE must be delivered to one of the parties joined in marriage.

SAMPLE COPY

Fig. 4.12



RECORD OF DIVORCE OR ANNULMENT

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

COUNTY

STATE FILE NO.

DOCKET NO

SAMPLE COPY

HUSBAND

HUSBAND-NAME FIRST MIDDLE LAST
1

USUAL RESIDENCE-STREET ADDRESS
2a

LOCALITY: CHECK ONE AND SPECIFY ☐ INSIDE CITY LIMITS OF ☐ INSIDE VILLAGE LIMITS OF: ☐ TWP. OF:
2b.

COUNTY
2c

STATE
2d

BIRTHPLACE (STATE OR FOREIGN COUNTRY)
3

DATE OF BIRTH (MO., DAY, YR.)
4

WIFE

WIFE-NAME FIRST MIDDLE LAST
5a.

MAIDEN NAME
5b.

USUAL RESIDENCE-STREET ADDRESS
6a

LOCALITY: CHECK ONE AND SPECIFY ☐ INSIDE CITY LIMITS OF: ☐ INSIDE VILLAGE LIMITS OF: ☐ TWP. OF:
6b.

COUNTY
6c

STATE
6d

BIRTHPLACE (STATE OR FOREIGN COUNTRY)
7

DATE OF BIRTH (MO., DAY, YR.)
8

PLACE OF THIS MARRIAGE-CITY
9a

COUNTY
9b

STATE (IF NOT IN U.S. NAME COUNTRY)
9c

DATE OF THIS MARRIAGE (MO., DAY, YR.)
9d

DATE COUPLE SEPARATED (MO., DAY, YR.)
10

NUMBER OF CHILDREN EVER BORN ALIVE OF THIS MARRIAGE (SPECIFY)
11a.

CHILDREN UNDER 18 IN THIS FAMILY (SPECIFY)
11b.

PLAINTIFF-HUSBAND, WIFE, BOTH, OTHER (SPECIFY)
12

ATTORNEY FOR PETITIONER-NAME (TYPE OR PRINT)
13a

ADDRESS STREET OR R.F.D. CITY OR VILLAGE STATE ZIP
13b

DECREE

I CERTIFY THAT THE MARRIAGE OF THE ABOVE NAMED PERSONS WAS DISSOLVED ON: MONTH DAY YEAR
14a.

TYPE OF DECREE-DIVORCE, DISSOLUTION OR ANNULMENT (SPECIFY)
14b.

DATE OF ENTRY (MO., DAY, YEAR.)
14c.

COUNTY OF DECREE
14d.

TITLE OF COURT
14e.

SIGNATURE OF CERTIFYING OFFICIAL
14f ▶

TITLE OF OFFICIAL
14g

INFORMATION FOR STATISTICAL PURPOSES ONLY

HUSBAND

NUMBER OF THIS MARRIAGE FIRST, SECOND, ETC. (SPECIFY)
15

IF PREVIOUSLY MARRIED HOW MANY ENDED BY DEATH / DIVORCE OR ANNULMENT (SPECIFY IF NONE)
16

EDUCATION - SPECIFY HIGHEST GRADE COMPLETED
ELEMENTARY OR SECONDARY 0☐ 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐ 11☐ 12☐
COLLEGE 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 5+☐
17

WIFE

NUMBER OF THIS MARRIAGE FIRST, SECOND, ETC. (SPECIFY)
18.

IF PREVIOUSLY MARRIED HOW MANY ENDED BY DEATH / DIVORCE OR ANNULMENT (SPECIFY IF NONE)
19

EDUCATION - SPECIFY HIGHEST GRADE COMPLETED
ELEMENTARY OR SECONDARY 0☐ 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐ 9☐ 10☐ 11☐ 12☐
COLLEGE 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 5+☐
20.

B-42
REV. 1-70

Names and Ages of All Children in Family

Name ______ Age ______
Name ______ Age ______
Name ______ Age ______
Name ______ Age ______
Name ______ Age ______
Name ______ Age ______